June 18, 2010

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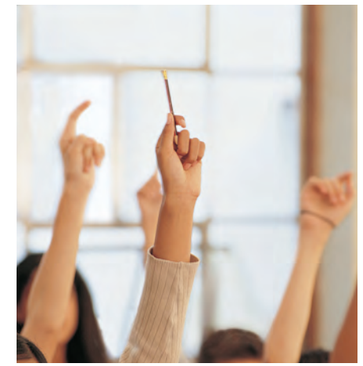
FROM: Morris Mikkelsen Morris

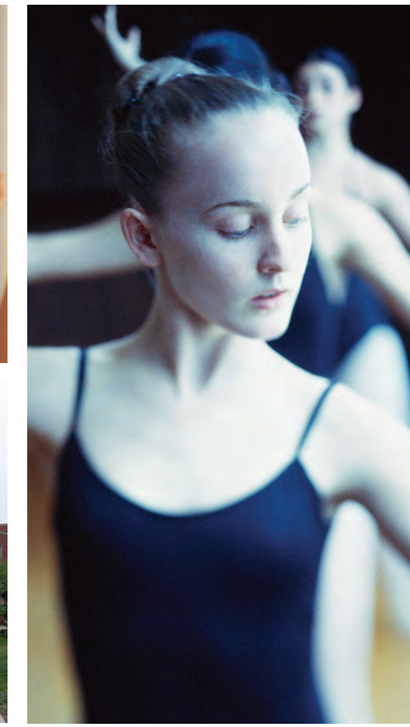
SUBJECT: FACILITY ASSESSMENT AND PRELIMINARY BUILDING CONCEPT
STATEWIDE RESEARCH AND DEVELOPMENT SCHOOL

We are forwarding a copy of the Facility Assessment and Preliminary Building Concept for a Statewide Research and Development School that has been prepared by the consulting firm, Perkins and Will.

A CD with this same information is also being transmitted to the President's Office and a CD will remain in Facilities Planning.

SF470 Legislation required that a facility study be completed of Price Laboratory School and this document has been prepared to fulfill that request.





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+WILL

EXISTING FACILITY ASSESSMENT

and Preliminary Building Concepts for a

Statewide Research and Development School

June 15, 2010

University of Northern Iowa
Cedar Falls, Iowa

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Introduction

The purpose of this study was to evaluate the long-term facility needs and facility costs for Malcolm Price Lab School (MPLS), which will become a Statewide Research and Development School.

The main focus of the study was to evaluate the costs and benefits of new construction versus renovation of the existing building. The question for this study became: would it be better to build a new research and development school than to renovate the existing Malcolm Price Laboratory School? This question of the study had multiple facets that needed to be addressed, including the required size and configuration of the school, the educational and environmental qualities required for the school, and the costs.

In order to understand what would be included in the building of the future, the planners and staff went through a process called space programming. The existing school was evaluated in terms of space utilization. All rooms in the existing building were listed in terms of area. The group then evaluated whether each room in the building was functioning adequately for its current and future intended use. In some cases, rooms were thought to be adequate in size and quantity. In other cases rooms were thought to be inadequate in either size or quantity or both. While the capacity of the school is not planned to increase beyond the current size of a two section K-12 school, a number of areas require additional space in order to accomplish their mission. Overall the total programmed area proposed for a new school did not grow beyond the existing area. A complete proposed space program is included.

In addition to accounting for the area of each of the building functions, the staff and planners discussed the desired organizational qualities and functional relationships for a more ideal new Statewide Research and Development School. While more abstract in nature and more difficult to quantify in dollars, the space organization and flow in a new school will have an enormous impact on the effectiveness of the learning environment, and must be seriously considered when evaluating options of a new building and a renovation option. Qualities such as identity by learning community or grade level that are lacking in the existing building were thought to be important for new and improved version of the school. This reinforced the need for some additional spaces and functions beyond those in the existing building, as well as idealized layouts.

After the space program was completed, two building concept options were developed for improvement of the school. A renovation option proposes to renovate and add on to the academic area of the existing school to meet the program, code and environmental requirements. A new construction option proposes to demolish the existing academic area of the school and to replace it with new construction to meet the needs identified in the space program. For each option, a sustainability assessment and preliminary budget were estimated and are included.

Project Goals

Goals of Study

- Define the physical space needs of the Malcolm Price Laboratory School.
- Identify the amount of space currently utilized by the school.
- Identify the physical challenges of the existing space to the educational process of the school.
- Create a model space program that matches the educational needs of a statewide research and development school, both for present and for 20-30 years into the future.
- Identify the ideal functional and organizational relationships for the school.
- Evaluate the costs of building new space to meet the needs identified for a statewide research and development school.
- Evaluate the costs of renovating the existing space to meet the needs identified for a statewide research and development school.
- Evaluate the costs and potential for achieving Leadership in Energy and Environmental Design (LEED) certification for both renovation and new construction options.

Educational Goals

- Provide a high quality learning and teaching environment in order to fulfill the mission of a statewide research and development school.
- Improve the quality of and configuration of space to allow innovate teaching methods and flexibility for changing learning processes.
- Provide a variety of learning settings for students and teachers.
- Integrate learning technologies throughout the facility.
- Maintain current enrollment capacity.
- Improve learning facilities for University of Northern Iowa (UNI) students.

Environmental Goals

- Make the building accessible as required by the American with Disabilities Act (ADA).
- Provide proper indoor air quality.
- Provide higher quality, energy efficient lighting throughout the building.
- Provide adequate heating, ventilation and air conditioning, with adequate temperature control throughout the building.
- Provide adequate waste and supply plumbing.
- Provide adequate electrical power to support current and future needs.

Existing Facility Assessment

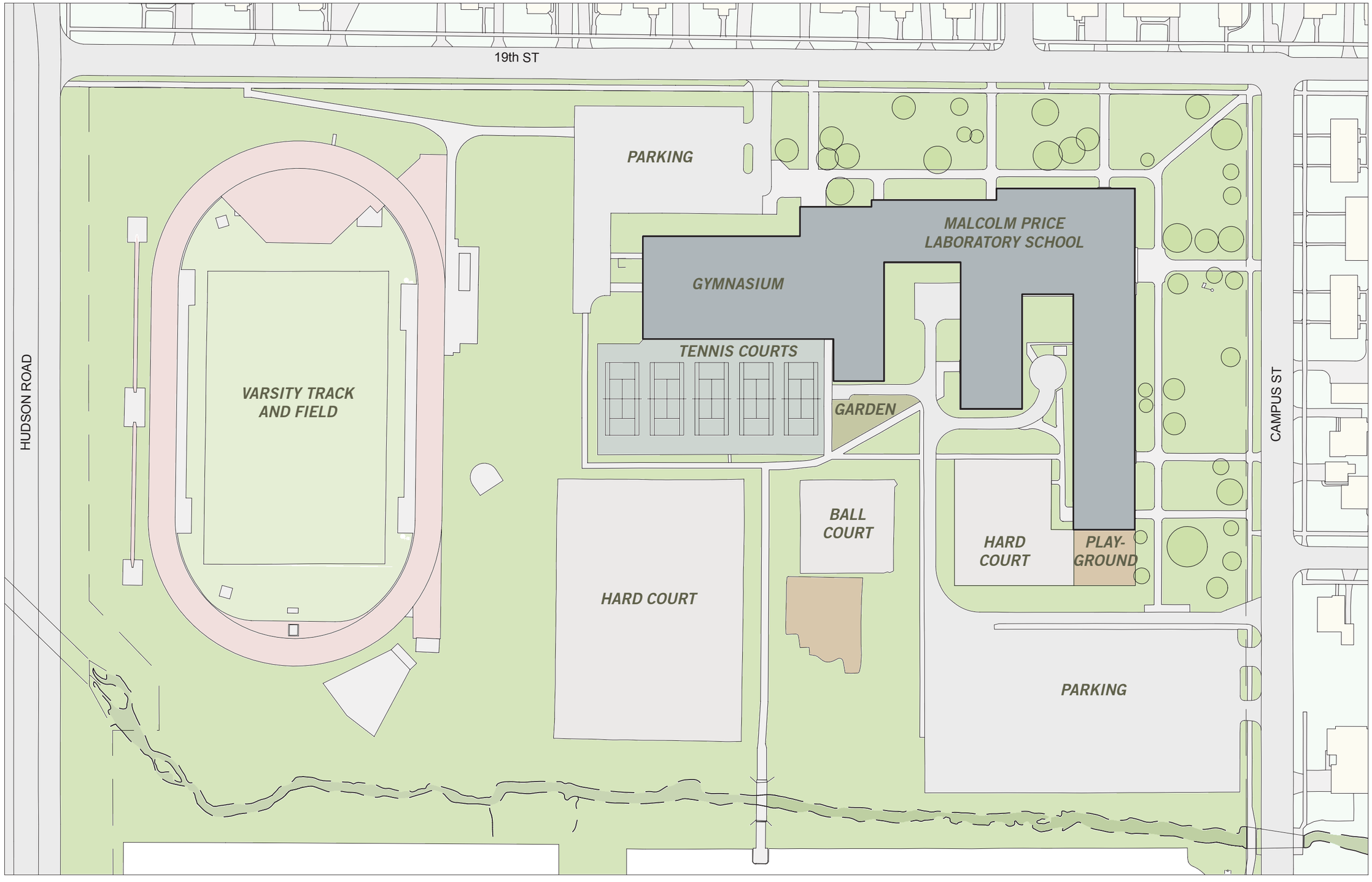
Malcolm Price Lab School was constructed in three phases: 1953, 1955, and 1957. The building was innovative and well-designed for its original use. The classrooms are adequately sized. The staff offices are a feature seldom found in comparable schools, and are well-integrated with the classrooms. The classrooms for the primary grades are currently organized in an open, flexible manner that supports teams of students and staff. The upper grade classrooms are organized along double-loaded corridors, as self-contained individual units, and are not organized by group or grade level.

There are many aspects of the building that are less than adequate for a modern educational facility. Even with regular maintenance and periodic remodeling, the building is showing signs of aging. Some of the usable spaces are undersized. The educational delivery is being negatively affected by the limitations of the building. Following are plan diagrams showing the organization of the existing facility and a list of specific shortcomings.

Table 1: Existing Facility Area Summary

Spaces	T.S.*	Students	Net Area (SF)
Child Development Center	4	52	3,148
Elementary School (K-5)	12	216	12,466
Middle School (6-8)	9	126	5,695
High School (9-12)	9	162	8,496
Shared Learning Spaces	5		9,244
Administration			6,147
Public Areas			8,591
Library/Media Center			4,000
Music	3		4,658
Drama and Performance Arts	1		8,752
Building Support			11,946
Physical Education			37,470
Capacity (PK-12 only @ 18 students/classroom)	34	556	
Net Area (SF)			120,613

*T.S. = Teaching Stations



STATEWIDE RESEARCH AND DEVELOPMENT SCHOOL - University of Northern Iowa

SITE PLAN - *Existing Malcolm Price Laboratory School (2010)*

NORTH

0' 25' 50' 100'

scale 1:100

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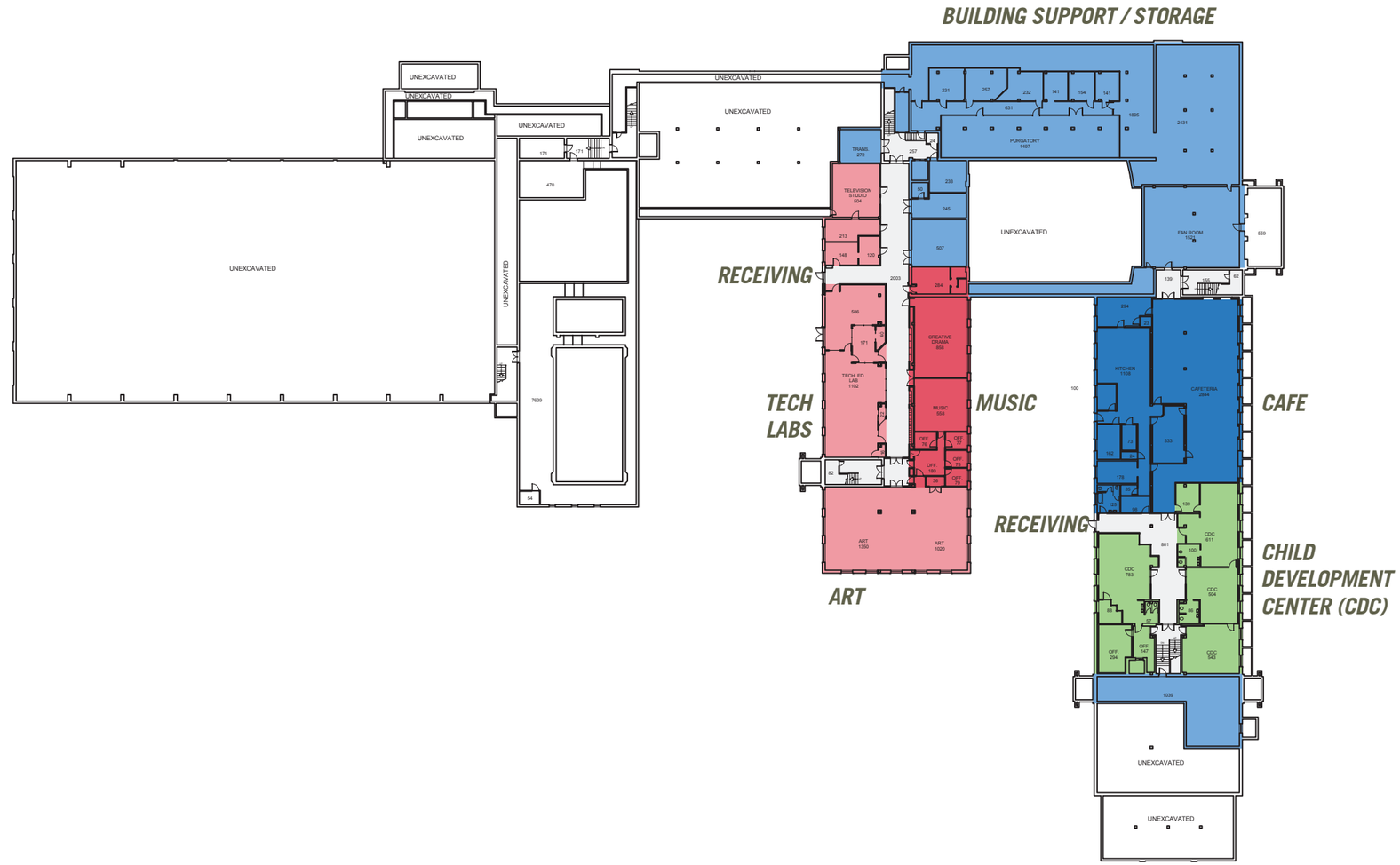

- Student Learning
- Student Learning Resources
- Shared Learning Area
- Administration/Faculty
- Commons
- Dining and Food Service
- Media Center
- Performance
- Physical Education
- Building Support/Storage
- Public Toilets
- Circulation

STATEWIDE RESEARCH AND DEVELOPMENT SCHOOL - University of Northern Iowa

PROGRAM PLAN - *Existing Malcolm Price Laboratory School - Basement Level*

NORTH

0' 15' 30' 60'

scale 1:60

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- Student Learning
- Student Learning Resources
- Shared Learning Area
- Administration/Faculty
- Commons
- Dining and Food Service
- Media Center
- Performance
- Physical Education
- Building Support/Storage
- Public Toilets
- Circulation

STATEWIDE RESEARCH AND DEVELOPMENT SCHOOL - University of Northern Iowa

PROGRAM PLAN - *Existing Malcolm Price Laboratory School - Ground Level*

NORTH

0' 15' 30' 60'

scale 1:60

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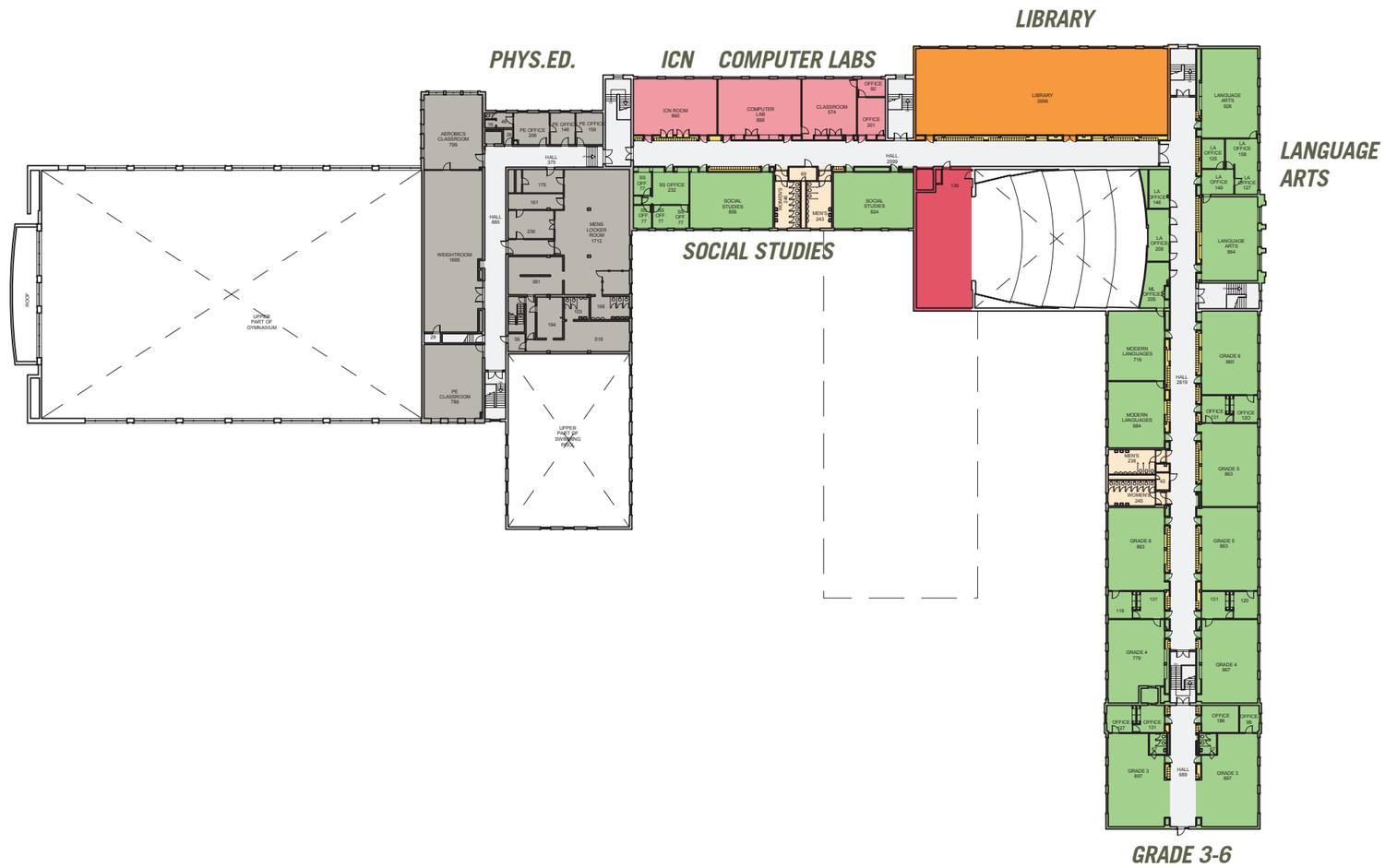

- Student Learning
- Student Learning Resources
- Shared Learning Area
- Administration/Faculty
- Commons
- Dining and Food Service
- Media Center
- Performance
- Physical Education
- Building Support/Storage
- Public Toilets
- Circulation

STATEWIDE RESEARCH AND DEVELOPMENT SCHOOL - University of Northern Iowa

PROGRAM PLAN - *Existing Malcolm Price Laboratory School - Second Level*

NORTH

0' 15' 30' 60'

scale 1:60

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Existing Facility: Space

The following areas are undersized or non-existent in the existing building:

- Receiving Area (*figure 1a*)
- Project Spaces (non-existent) *(figure 2a)*
- Early Childhood Classrooms (non-existent) *(figure 3a)*
- Student Commons (undersized) *(figure 4a)*
- Swimming Pool (undersized for competitions) *(figure 5a)*
- Faculty offices (undersized) *(figure 6a)*
- Cafeteria / Food Service (undersized with poor location) *(figure 7a)*
- Storage (undersized) (*figure 8a, 9a*)
- Team Resource Spaces (non-existent)
- Small Group Spaces (non-existent)
- UNI student classrooms / seminar rooms (non-existent)

FIGURE 1a: *Inadequate receiving area along with non-integrated recycling.*

FIGURE 2a: *Students sit in the hall due to a lack of non-classroom collaborative spaces.*

FIGURE 3a: *No early childhood classrooms in Child Development Center.*

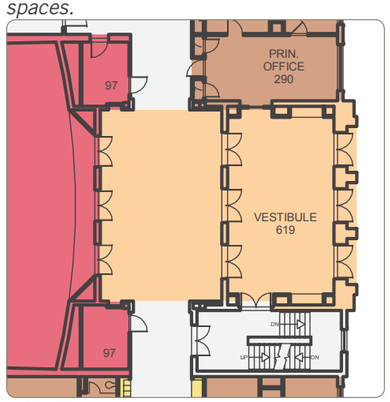


FIGURE 4a: *Undersized student commons (750 sq. sf).*

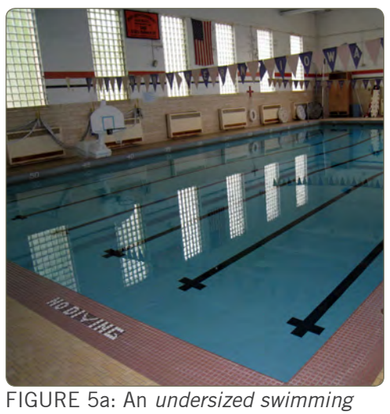


FIGURE 5a: An *undersized swimming pool prohibits competition feasibility.*

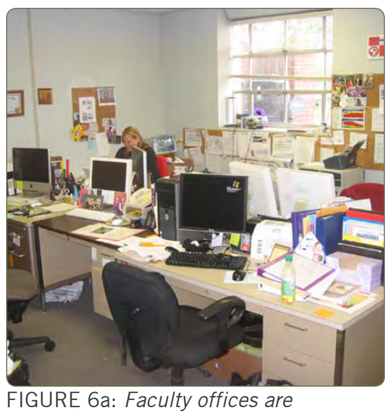


FIGURE 6a: *Faculty offices are undersized and lack adequate storage.*

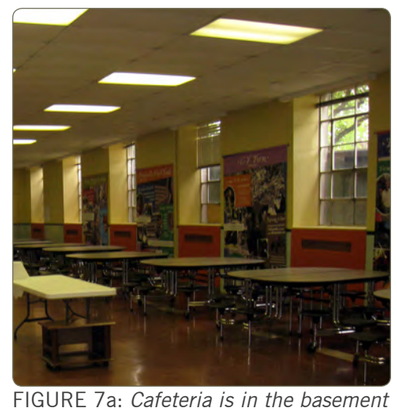


FIGURE 7a: *Cafeteria is in the basement with limited daylighting and views.*

FIGURE 8a: *Storage facilities beyond capacity and hazardous to user.*

FIGURE 9a: *Evidence of lack of storage.*

Existing Facility: Organization

As a K-12 school, the school is well integrated. Students of all ages mix in many areas of the building. This is a source of pride and identity in the school that all of the students recognize and respect each other. However, there is also no sense of hierarchy or identity about the groups within the existing building *(figure 1b, 2b)*. Making an identifiable area for the Child Development Center (CDC), elementary, middle and high school areas is not possible with the present organization of space.

The classroom configuration of this building is architectural rather than educational. The majority of classrooms are laid out along efficient double-loaded corridors. Most of the learning spaces are traditional classrooms, without a great deal of flexibility. This layout has worked well for mostly self-contained classrooms grouped by grade level or subject *(figure 3b)*. The layout does not allow much variety of learning settings or group sizes. Learning activities that include the use of group work, project work and technology resources are not facilitated by the organization of spaces *(figure 4b, 5b)*.

FIGURE 1b: *Lack of identity or sense of hierarchy within the learning areas.*

FIGURE 2b: *Lack of identity or sense of hierarchy within the learning areas.*

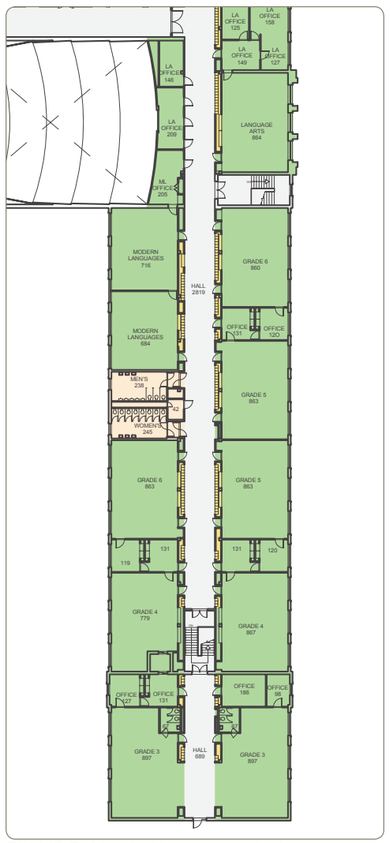


FIGURE 3b: *Self-contained classrooms by grade level or subject prohibits a project-based curriculum.*

FIGURE 4b: *Long double-loaded corridors do not allow for project work.*

FIGURE 5b: *The only group work area is located in the library.*

Existing Facility: Circulation

Consistent with the double loaded corridor layout of the classrooms, the circulation within the existing building has a long, linear nature *(figure 3c)*. Traffic tends to flow through adjacent areas of the building to get to common shared areas *(figure 4c)*. The elementary students from the south side of the building need to go through the middle and high school areas to get to the library and to the gymnasium *(figure 1c, 2c)*. High school students pass through the lower level grade levels to get to the cafeteria.

Without any overflow space from the classrooms, student often use the corridors for all kinds of activities such as seating, waiting, and reading *(figure 5c)*. Congestion and noise occur as a result of the corridor traffic conflicts.

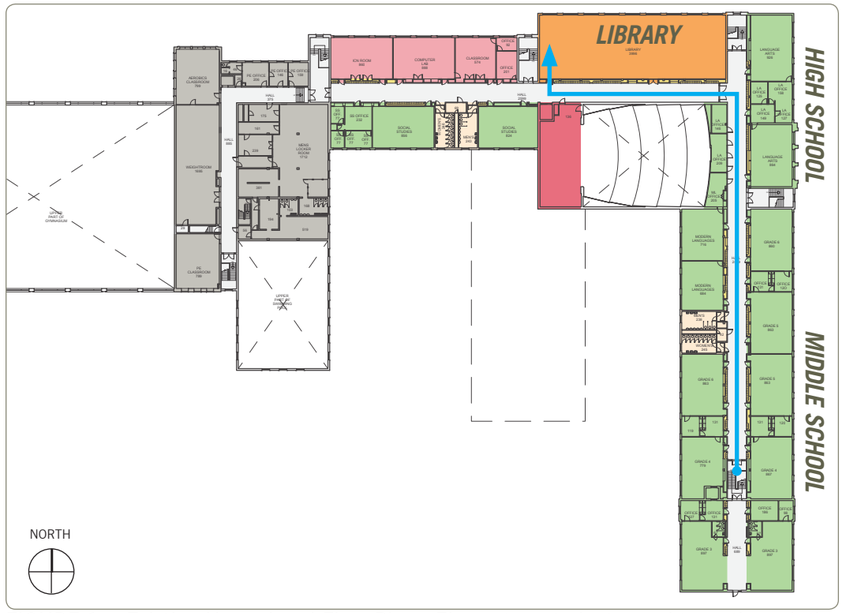


FIGURE 1c: *Existing Upper Level Floor Plan - Elementary students need to go through the middle and high school area to arrive at the library (blue arrow).*

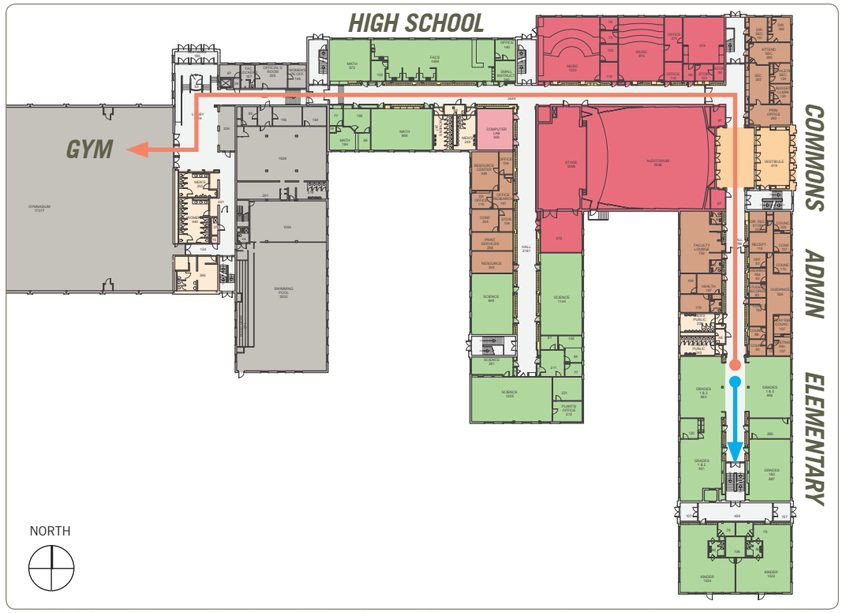


FIGURE 2c: *Existing First Level Floor Plan - Elementary students need to go through the high school and public commons to arrive at the gymnasium (orange arrow).*

FIGURE 3c: *Long, linear circulation results in less instructional time due to travel time between classes.*

FIGURE 4c: *Traffic flows through long corridors to get to common areas.*

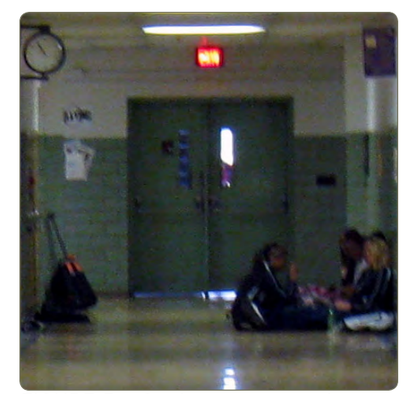


FIGURE 5c: *Students must use the hallways for overflow space.*

Existing Facility: Technology

Teachers would like to incorporate the use of LED projectors and smart boards into the classrooms *(figure 1d, 2d)*. These technologies could be retrofitted into the existing building as part of the renovation or provided in the new building options.

There is also a need for video networking in the building for videotaping teaching and learning activities to evaluate student teachers and to demonstrate best practices in the classroom. This would allow the videotaping and sending of video signals to and from many if not all classrooms. It would also allow videotaped events to be broadcast to other classrooms and seminar buildings.

There are several computer labs within the building that have been upgraded and are functioning well. In the future building, it is planned that computer use would be more dispersed, personal with the use of laptops and integrated into classrooms and shared resource areas *(figure 3d, 4d, 5d, 6d)*.

The current building infrastructure is stretched beyond its limits to support new instructional technology *(figure 7d)*. The electrical system is under capacity and needs to be upgraded significantly to support current and expanded use of computers and other technologies in the school *(figure 8d)*.

Some existing computer stations are not conveniently located *(figure 9d)*.

FIGURE 1d: *Video networking and smart boards are needed additions to the classroom environment.*

FIGURE 2d: Video *projection equipment is not integrated in the classroom setup.*

FIGURE 3d: *The use of dispersed technology needs to be increased.*

FIGURE 4d: *Teacher computer stations are located wherever they fit.*

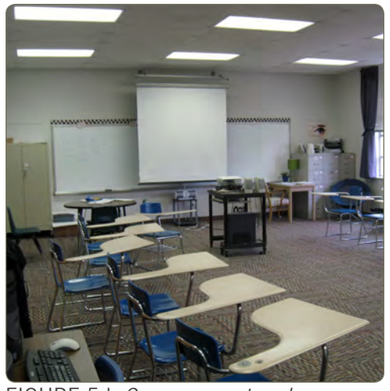


FIGURE 5d: *Some computer classrooms have lack of proper integrated furniture.*

FIGURE 6d: *Data and electric hookups are not integrated in the facility.*

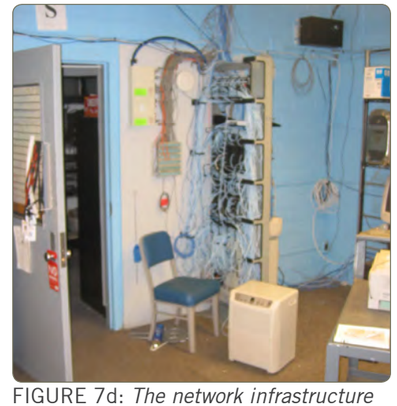


FIGURE 7d: *The network infrastructure has been added to over the years and needs to be more efficient.*

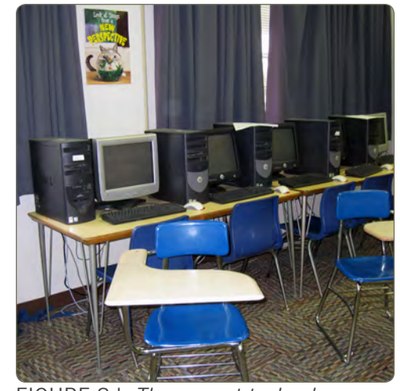


FIGURE 8d: *The current technology capacity is limited due to inadequate electrical capacity.*

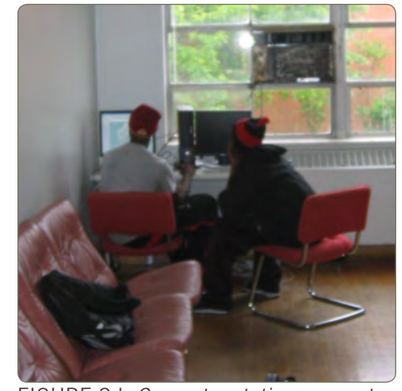


FIGURE 9d: *Computer stations are not conveniently located.*

Existing Facility: Interior Spaces

Many interior and exterior walls are in need of repair *(figure 1e, 2e, 3e)*.

An asbestos survey has been conducted and abatement will need to be completed prior to any construction work. There are materials present in the facility that are commonly found to contain asbestos:

- The 9" x 9" floor tile present throughout the facility *(figure 4e)*
- Plaster especially in the older sections *(figure 5e)*
- Pipe Insulation *(figure 6e)*

Moisture problems need to be evaluated. *(figure 7e, 8e, 9e)*.

FIGURE 1e: *Interior finishes are worn such as peeling paint.*

FIGURE 2e: *Many exterior walls are in disrepair.*

FIGURE 3e: *Interior walls are damaged and need to be repaired.*

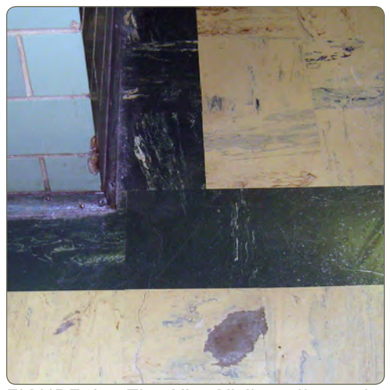


FIGURE 4e: *The 9" x 9" floor tile used commonly contains asbestos.*

FIGURE 5e: *Plaster used in older walls commonly contain asbestos.*

FIGURE 6e: *The pipe insulation wrap used commonly contains asbestos.*

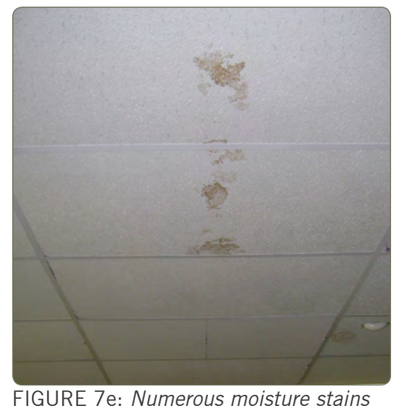


FIGURE 7e: *Numerous moisture stains are seen on the ceiling material.*

FIGURE 8e: *Numerous moisture stains have been seen on the floor.*

FIGURE 9e: *Numerous moisture stains have been seen on the floor.*

Existing Facility: Life Safety Code Issues

The current building code requires installation of a sprinkler system in all E-1 Educational Occupancies. The existing building is currently not sprinklered.

The existing corridors require improved fire ratings at all doors and stairs.

All corridor walls and doors do not provide the required fire rating for an educational facility *(figure 1f)*.

Fire separation partitions and doors at the stairs need improved fire ratings *(figure 2f)*.

Exit door restrictions include *(figure 3f, 4f)*:

- Rooms that are over 1000 sq. ft. require 2 exits that are spaced more than half the distance of the diagonal of the room.
- Labs using hazardous chemicals require 2 exits.

Fire ratings must continue to the exterior for life safety exiting requirements *(figure 5f)*.

Due to existing long corridors, all current stair locations would need to be retained if the facility was renovated to comply with exit travel distance restrictions and dead-end corridor codes. *(figure 6f)*.

FIGURE 1f: *Classroom doors are not fire-rated and does not meet code.*

FIGURE 2f: *The use of wire glass at fire doors does not meet current code.*

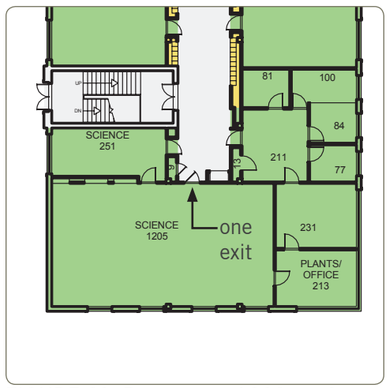


FIGURE 3f: *Rooms over 1000 sq. ft. require 2 means of exit.*

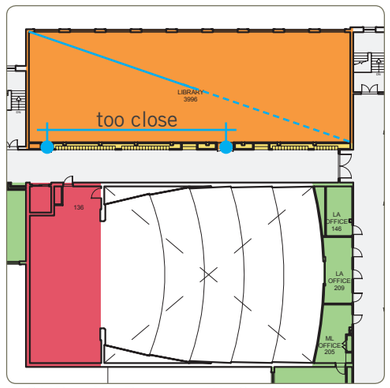


FIGURE 4f: *Rooms with 2 exits must space doors more than 1/2 diagonal of room.*

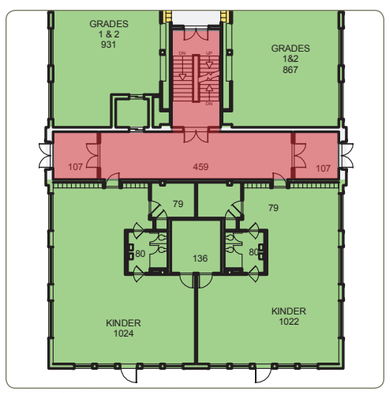


FIGURE 5f: *The fire rating of the stair must continue to the exterior (red).*

FIGURE 6f: *Long corridor lengths and dead-ends require numerous stairs for code-compliance.*

Existing Facility: Accessibility Issues

Not all of the exterior doors are accessible *(figure 1g)*.

Many interior doors are not wheelchair accessible *(figure 2g, 3g)*.

Many drinking fountains are not wheelchair accessible *(figure 4g)*.

The current toilet facilities do not meet current accessibility code standards *(figure 5g)*.

Some teaching stations are not wheelchair accessible and do not meet current accessibility code standards *(figure 6g)*.

The current handrail and guardrail design at the stairs do not meet ADA requirements *(figure 7g,8g,9g)*.

FIGURE 1g: *All exit doors are not wheelchair accessible.*

FIGURE 2g: *The corridor to the gymnasium is not wheelchair accessible.*

FIGURE 3g: *The required maneuvering door clearances at all classrooms do not meet ADA requirements.*

FIGURE 4g: *Numerous drinking fountains are not wheelchair accessible.*

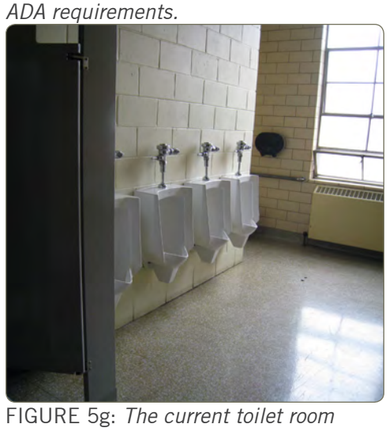


FIGURE 5g: *The current toilet room design does not meet current standards.*

FIGURE 6g: *The teaching podiums are not wheelchair accessible.*

FIGURE 7g: *The handrail design is too close to the wall and does not meet code.*

FIGURE 8g: *The metal guardrail is too far spaced and does not meet code.*

FIGURE 9g: *The metal guardrail is too far spaced and does not meet code.*

Existing Facility: Exterior Envelope Issues

All of the windows need to be replaced throughout the entire facility due to condition and lack of insulated glass and frame properties *(figure 1h, 2h)*.

The exterior walls appear to be un-insulated masonry which may hinder its overall energy efficiency.

Areas of brick and stonework throughout the entire facility need to be tuck-pointed *(figure 3h, 4h, 5h, 6h)*.

Exterior caulking and joint sealant needs to be replaced in many areas *(figure 7h)*.

The condition of the roof membrane is adequate from a visual inspection. The condition of some of the roof coping does not demonstrate the use of current building systems and techniques *(figure 8h)*.

Evidence of moisture issues and staining seen on the exterior brick *(figure 9h)*.

Areas of exterior trim need to be painted.

FIGURE 1h: *Exterior windows are in poor condition and do not use insulated glass.*

FIGURE 2h: *Exterior windows are in poor condition from continual retrofits.*

FIGURE 3h: *Stone sills need to be tuck-pointed and recaulked.*

FIGURE 4h: *Evidence of major brick deterioration.*

FIGURE 5h: *Stone pilasters need to be recaulked and repaired.*

FIGURE 6h: *Evidence of brick deterioration.*

FIGURE 7h: *Evidence of wall deterioration.*

FIGURE 8h: *Roof coping does not use standard techniques and suspect to failure.*

FIGURE 9h: *Staining from moisture issues.*

Existing Facility: Mechanical & Electrical Issues

What little cooling capabilities exists is through window mounted air-conditioning units *(figure 1j)*.

There is a need for improved lighting quality and the use of efficient lighting technologies *(figure 2j)*.

There is a general lack of code-required amount of mechanical ventilation *(figure 3j)*.

There is a lack of adequate temperature control to the classrooms *(figure 4j, 5j)*.

The existing mechanical equipment and controls are out-of-date and are both ineffective and inefficient *(figure 6j, 7j, 8j)*. The facility does not have access to a central chilling plant and is connected to the university steam distribution system.

There is a great need for an increased capacity of the electrical power distribution system. The current distribution system is not adequate and cannot accommodate any future needs capacity *(figure 9j)*.

FIGURE 1j: *The buildings cooling system is through window mounted AC units.*

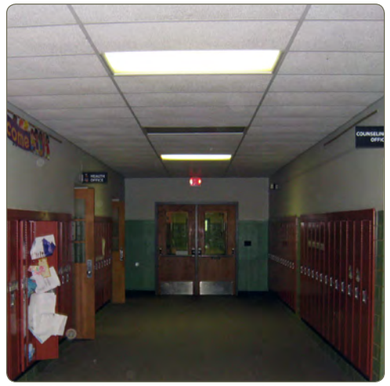


FIGURE 2j: *Inadequate and inefficient artificial lighting systems.*

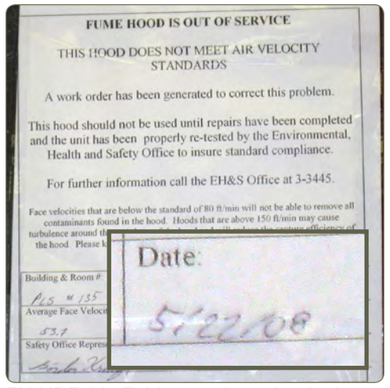


FIGURE 3j: *Evidence of mechanical deficiencies and need for maintenance.*

FIGURE 4j: *Mechanical systems need repair and lack adequate controls.*

FIGURE 5j: *Building mechanical systems are not capable of building automation and intelligent control.*

FIGURE 6j: *Existing mechanical equipment is out-of-date and requires an upgrade.*

FIGURE 7j: *Existing mechanical equipment is out-of-date and requires an upgrade.*

FIGURE 8j: *Existing mechanical equipment is out-of-date and requires an upgrade.*

FIGURE 9j: *Existing electrical system is out-of-date and inadequate*

Programmatic Components

The existing program of the model research and development school was evaluated on its current functionality and future expansion abilities. In some cases, rooms were thought to be adequate in size and quantity while others were thought to be inadequate in either size or quantity or both. While the capacity of the school is not planned to increase beyond the current size of a two section K-12 school, a number of areas require additional space in order to successfully integrate the main functions of a statewide research and development school. An example would be the Child Development Center (CDC) which grew by 8,000 sq. ft. Even though additional program spaces were added, some spaces were reduced such as dedicated computer labs. Overall the total area proposed for the new school did not grow beyond the existing area. This is due to optimizing the programmed areas while still allowing for growth in the learning areas with larger classrooms. A summary space program is shown below with supplemental detailed area breakdowns in the following pages.

Table 2 - New Program Area Summary with Comparison to the Existing Program

Spaces	T.S.*	Students	Proposed Net Area (SF)	Existing Net Area (SF)	Change (%)
Child Development Center	10	140	11,620	3,148	369%
Elementary School (K-5)	12	216	16,450	12,466	132%
Middle School (6-8)	7	126	10,110	5,695	178%
High School (9-12)	7	126	10,630	8,496	125%
Shared Learning Spaces	3	54	6,240	9,244	68%
Administration / Faculty			5,530	6,147	90%
Public Areas			12,300	8,591	143%
Library/Media Center			4,200	4,000	105%
Music	4	88	5,660	4,658	122%
Drama and Performance Arts			5,700	8,752	65%
Building Support / Storage			9,670	11,946	81%
New Capacity (PK-12 only @ 18 students/classroom)	36	608			
New Net Area (SF)			98,110	83,143	118%
Gross Area Multiplier			1.40		
New Gross Area (SF)			**137,354**		
Existing Gross Area to be Reused (Physical Education)			40,537		
Total Building Gross Area			**177,891**	**178,412**	**100%**

*T.S. = Teaching Stations

Programmatic Growth Capacity

Model research and development schools historically have a higher square foot per student ratio than a typical K-12 school. In many cases, a typical K-12 school will have overlapping programs in a space due to budget, teacher and/or space limitations. This overlap is detrimental to a successful model research and development school since the four guiding functions are to test, model, determine and share effective instructional practices and techniques. These functions can be compromised by a lack of adequate teaching and learning space.

To optimize the functional requirements of a new statewide research and development school and to provide for potential future growth of the student population, the new program increases the typical classroom size from 750 square feet to 900-1200 square feet. This area increase allows for greater curriculum flexibility and enhanced instructional practices while allowing the facility to comfortably contain future student growth (Table 3).

Table 3 - Classroom Capacities for Future Facility Growth

CLASSROOM SIZE PROJECTIONS FOR FUTURE GROWTH					
Students per Classroom	**Classroom Qty**	**18**	**20**	**22**	**24**
Child Development Center (14 students max)	10	140	140	140	140
Elementary School (K-5)	12	216	240	264	288
Middle School (6-8)	7	126	140	154	168
High School (9-12)	7	126	140	154	168
Total Students		608	660	712	764
New Square Foot (1) per Student		293	270	250	233
Current Square Foot (2) per Student (3)		**320**			
(1) New Construction Gross Area (SF)					177,891
(2) Existing Gross Area (SF)					178,412
(3) Existing Student Population @ 18 students per classroom					556

The following section provides a numerical breakdown of each major program proposed for the preliminary building concepts. Graphical representations are also used to compare to scale the relative sizes of each program component and how the major program groups may be organized to enhance collaboration, community and identity.

Table 4 - Child Development Center Program

Spaces	per space T.S.	per space Students	total No.	total T.S.	total Students	Area (SF)	Subtotal (SF)
Infants							
Classroom	1	14	3	3	42	600	1,800
Staff Office			1			120	120
Storage			3			50	150
Restroom			3			50	150
							2,220
Toddlers							
Classroom	1	14	3	3	42	600	1,800
Staff Office			1			120	120
Storage			3			50	150
Restroom			3			50	150
							2,220
2-3 Year Olds							
Classroom	1	14	2	2	28	900	1,800
Staff Office			1			120	120
Storage			2			50	100
Restroom			2			50	100
							2,120
3-5 Year Olds							
Classroom	1	14	2	2	28	1,000	2,000
Staff Office			1			120	120
Storage			2			50	100
Restroom			2			50	100
							2,320
Shared Areas							
Central Office/Reception			1			300	300
Director's Office			1			200	200
Food Preparation			1			200	200
General Storage/Laundry			1			200	200
Indoor Playroom			1			1,000	1,000
Restrooms			2			80	160
Staff Work/Health/Conf.			1			200	200
Student Storage			4			120	480
							2,740
Grand total				10	140		11,620

*T.S. = Teaching Stations

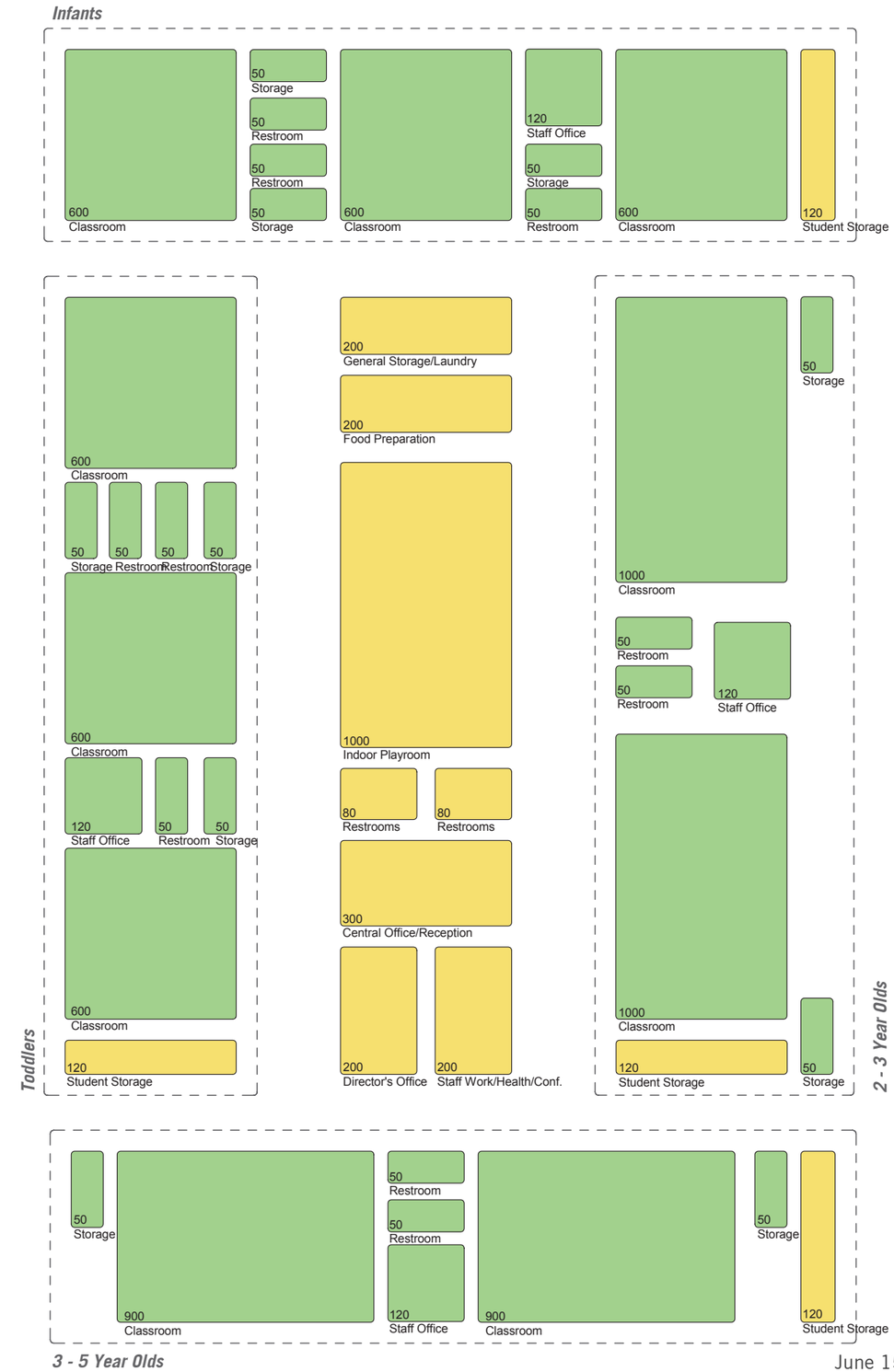


Table 5 - Elementary School (K-5) Program

	per space			*total*			
Spaces	**T.S.**	**Students**	**No.**	**T.S.**	**Students**	**Area (SF)**	**Subtotal (SF)**
Kindergarten							
Classroom	1	18	2	2	36	1,100	2,200
Staff Office			2			100	200
Storage			2			50	100
Restroom			2			50	100
							2,600
Grade One							
Classroom	1	18	2	2	36	900	1,800
Staff Office			2			100	200
							2,000
Grade Two							
Classroom	1	18	2	2	36	900	1,800
Staff Office			2			100	200
							2,000
Grade Three							
Classroom	1	18	2	2	36	900	1,800
Staff Office			2			100	200
							2,000
Grade Four							
Classroom	1	18	2	2	36	900	1,800
Staff Office			2			100	200
							2,000
Grade Five							
Classroom	1	18	2	2	36	900	1,800
Staff Office			2			100	200
							2,000
Shared Areas							
Team/Project Area			3			800	2,400
Storage			5			100	500
							2,900
University Space							
UNI Multi-Use Classroom			1			900	900
UNI Multi-Use Storage			1			50	50
							950
Grand total				**12**	**216**		**16,450**

*T.S. = Teaching Stations

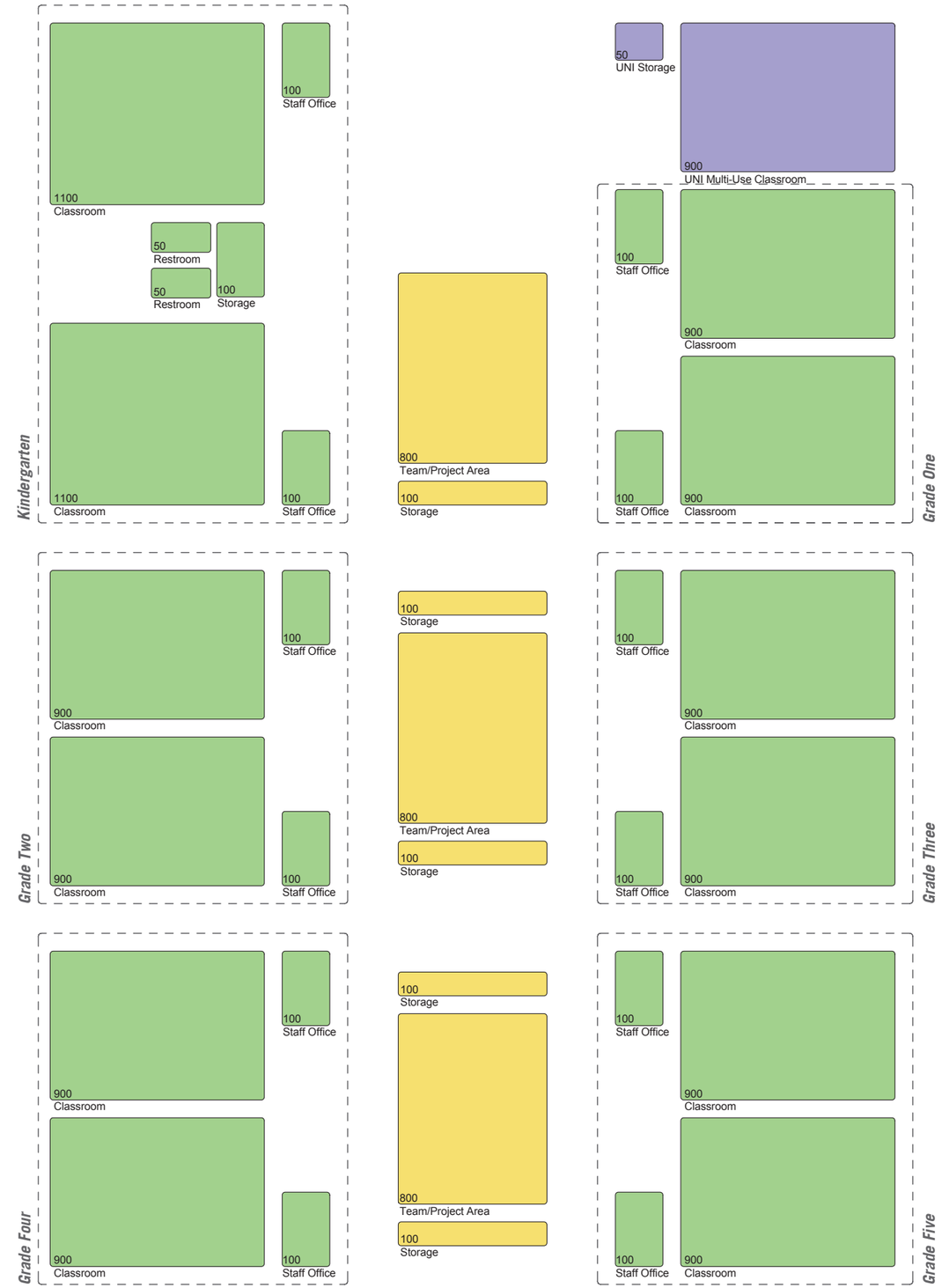


Table 6 - Middle School (6-8) Program

	per space		*total*				
Spaces	**T.S.**	**Students**	**No.**	**T.S.**	**Students**	**Area (SF)**	**Subtotal (SF)**
Grade Six							
LA/SS Classroom	1	18	1	1	18	900	900
Science/Math Classroom	1	18	1	1	18	900	900
Staff Office			2			100	200
Storage			1			120	120
							2,120
Grade 7-8							
Language Arts Classroom	1	18	1	1	18	900	900
Modern Language Classroom	1	18	1	1	18	900	900
Social Sciences Classroom	1	18	1	1	18	900	900
Math Classroom	1	18	1	1	18	900	900
Science Classroom	1	18	1	1	18	1,200	1,200
Science Storage/Prep			1			200	200
Staff Office			2			120	240
							5,240
Shared Areas							
Team/Project Area			2			800	1,600
Storage			2			100	200
							1,800
University Space							
UNI Multi-Use Classroom			1			900	900
UNI Multi-Use Storage			1			50	50
							950
Grand total				**7**	**126**		**10,110**

*T.S. = Teaching Stations

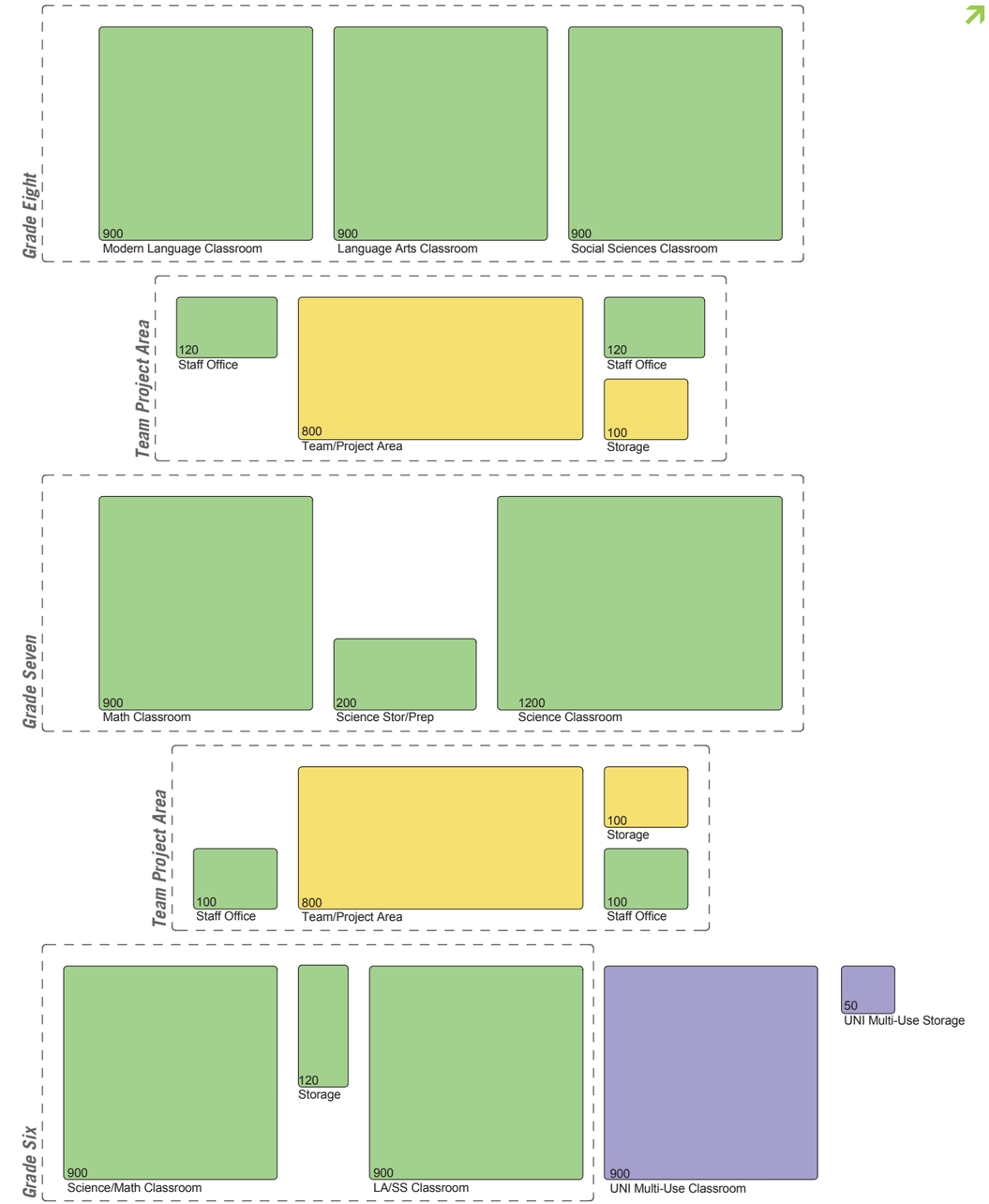


Table 7 - High School (9-12) Program

	per space		*total*				
Spaces	**T.S.**	**Students**	**No.**	**T.S.**	**Students**	**Area (SF)**	**Subtotal (SF)**
Grade 9-12							
Language Arts Classroom	1	18	2	2	36	900	1,800
Modern Language Classroom	1	18	1	1	18	900	900
Social Studies Classroom	1	18	1	1	18	900	900
Math Classroom	1	18	1	1	18	900	900
Science Classroom	1	18	2	2	36	1,200	2,400
Science Storage/Prep			2			250	500
Staff Office			4			120	480
							7,880
Shared Areas							
Team/Project Area			2			800	1,600
Storage			4			50	200
							1,800
University Space							
UNI Multi-Use Classroom			1			900	900
UNI Multi-Use Storage			1			50	50
							950
Grand total				**7**	**126**		**10,630**

*T.S. = Teaching Stations

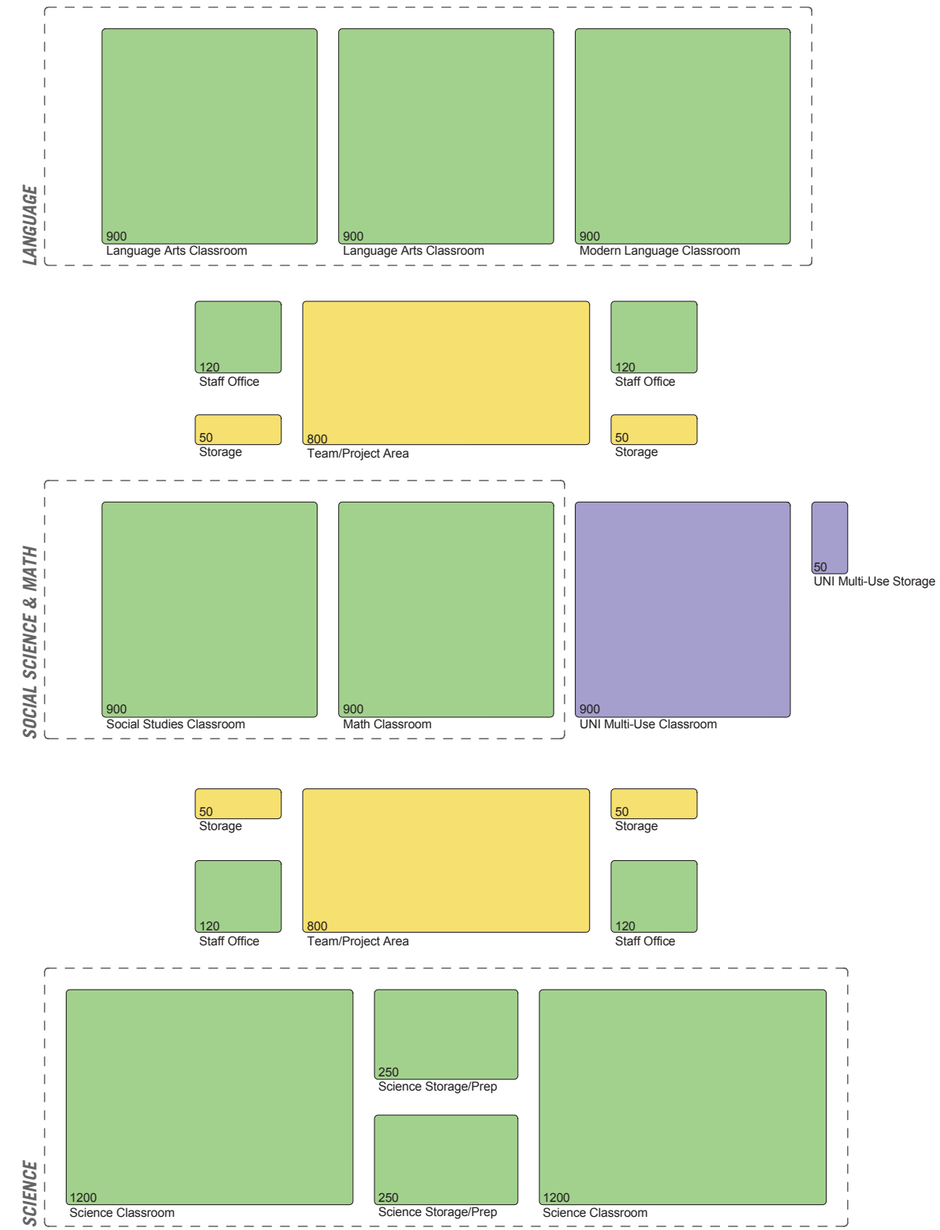
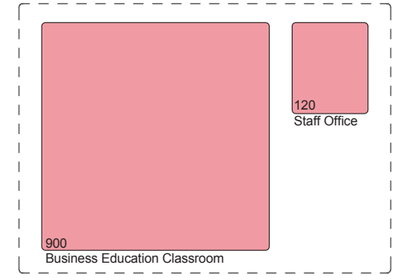


Table 8 - Shared Learning Labs Program

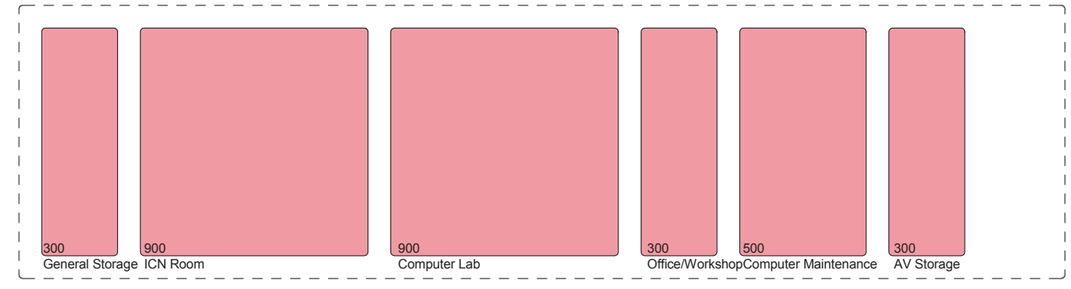
	per space		total				
Spaces	**T.S.**	**Students**	**No.**	**T.S.**	**Students**	**Area (SF)**	**Subtotal (SF)**
Art							
Art Classroom	1	18	2	2	36	1,200	2,400
Staff Office			1			120	120
Storage			2			200	400
							2,920
Business Education							
Business Education Classroom	1	18	1	1	18	900	900
Staff Office			1			120	120
							1,020
Technology							
Computer Lab			1			900	900
AV Storage			1			300	300
Computer Maintenance			1			500	500
General Storage			1			300	300
ICN Room			1			900	900
Office/Workshop			1			300	300
							2,300
Grand total				**3**	**54**		**6,240**

*T.S. = Teaching Stations

Business Education



Technology



Art

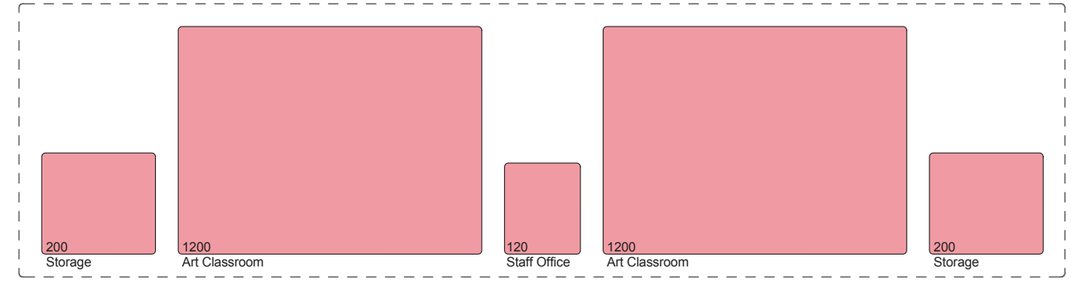
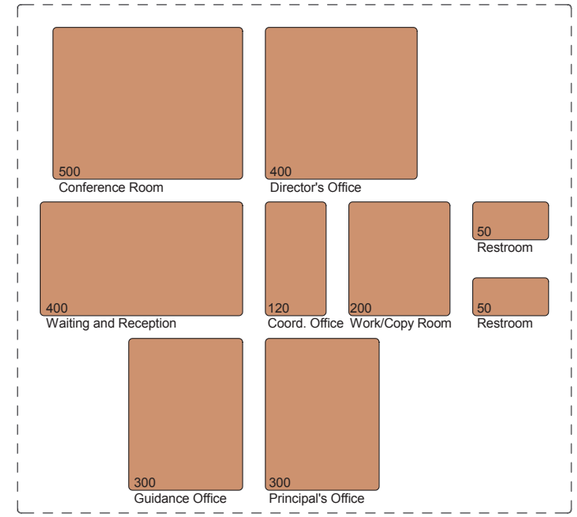


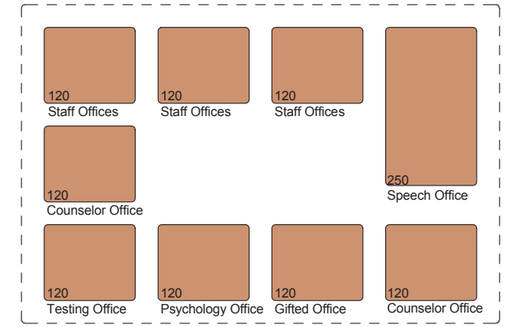
Table 9 - Administration Program

Spaces	No.	Area (SF)	Subtotal (SF)
Administration			
Waiting and Reception	1	400	400
Director's Office	1	400	400
Principal's Office	1	300	300
Coord. Office	1	120	120
Conference Room	1	500	500
Guidance Office	1	300	300
Restroom	2	50	100
Work/Copy Room	1	200	200
			2,320
Special Needs			
Testing Office	1	120	120
Counselor Office	2	120	240
Gifted Office	1	120	120
Speech Office	1	250	250
Psychology Office	1	120	120
Staff Offices	3	120	360
			1,210
Special Needs (distributed)			
Resource Classroom	3	350	1,050
Storage	4	50	200
			1,250
Health Office			
Recept./Waiting	1	200	200
Nurse's Office/Exam Room	1	250	250
Cot Room	1	150	150
Storage	1	50	50
Toilet Room	1	100	100
			750
Grand total			**5,530**

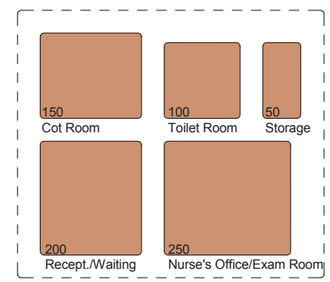
Administration



Special Needs



Health Office



Special Needs - located in K-5, 6-8, and 9-12 areas

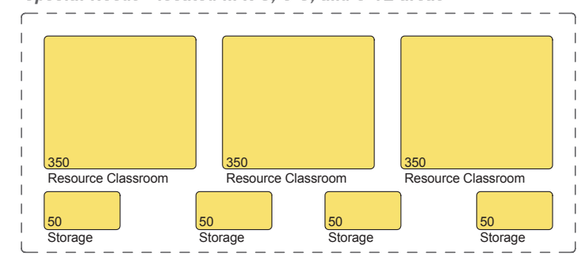
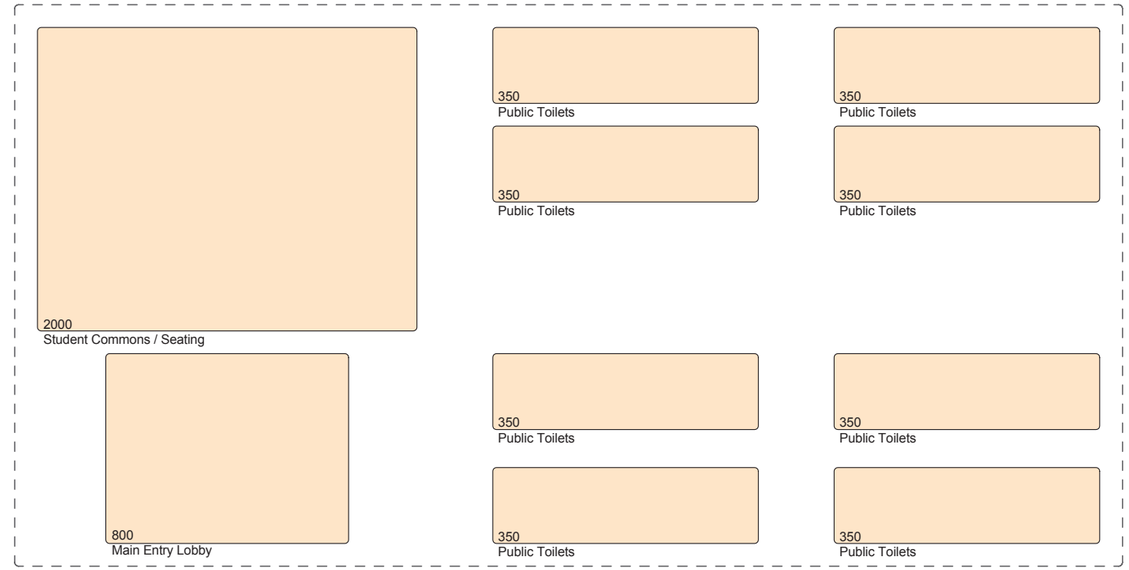


Table 10 - Community Space Program

Spaces	No.	Area (SF)	Subtotal (SF)
Public Areas			
Main Entry Lobby	1	800	800
Shared Dining / Seating	1	3,600	3,600
Student Commons / Seating	1	2,000	2,000
Table Storage	1	400	400
Public Toilets	8	350	2,800
			9,600
Food Service			
Servery	1	500	500
Kitchen/Food Prep	1	1,100	1,100
Freezer/Cooler/Storage	1	400	400
Dishwashing	1	200	200
Janitor	1	100	100
Receiving/Maintenance	1	120	120
Staff Lockers	1	100	100
Staff Office	1	100	100
Restroom	1	80	80
			2,700
Grand total			**12,300**

Public Areas



Dining and Food Service

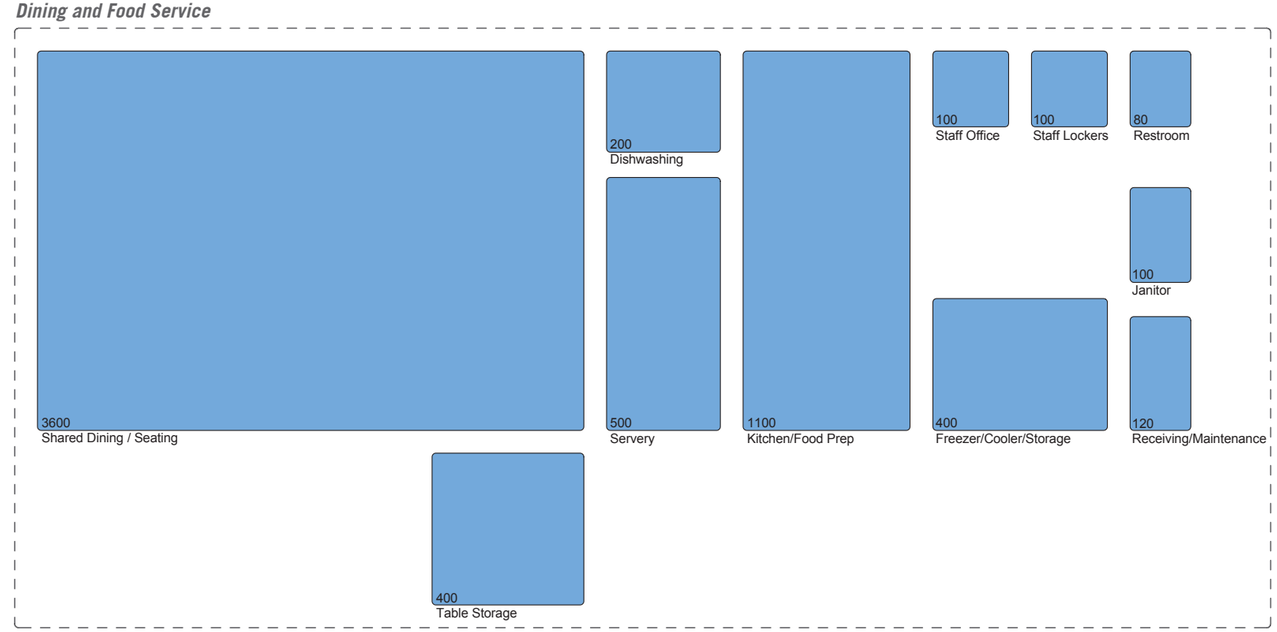


Table 11 - Library / Media Center Program

Spaces	No.	Area (SF)	Subtotal (SF)
Library/Media Center			
Library-Reading/Study Area	1	1,100	1,100
Books/Periodicals	1	900	900
Reference/Circulation	1	150	150
Computer Lab	1	900	900
Tech Production Workroom	1	600	600
Staff Workroom/Office	1	250	250
Storage	1	150	150
Tech Production Storage	1	150	150
			4,200
Grand total			**4,200**

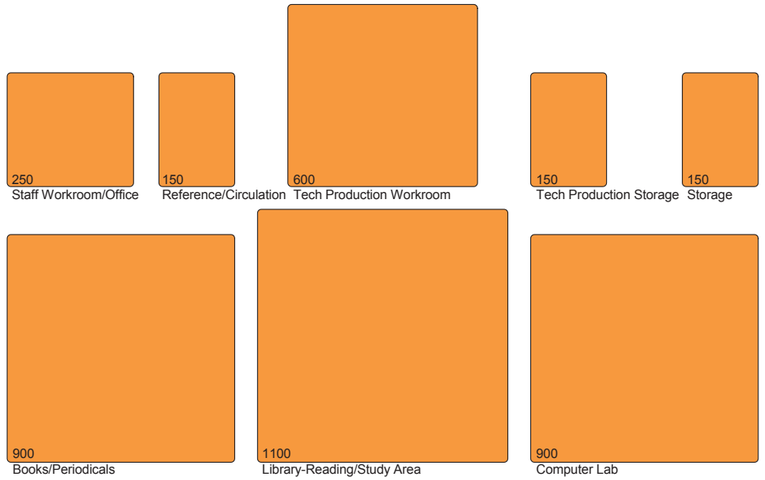
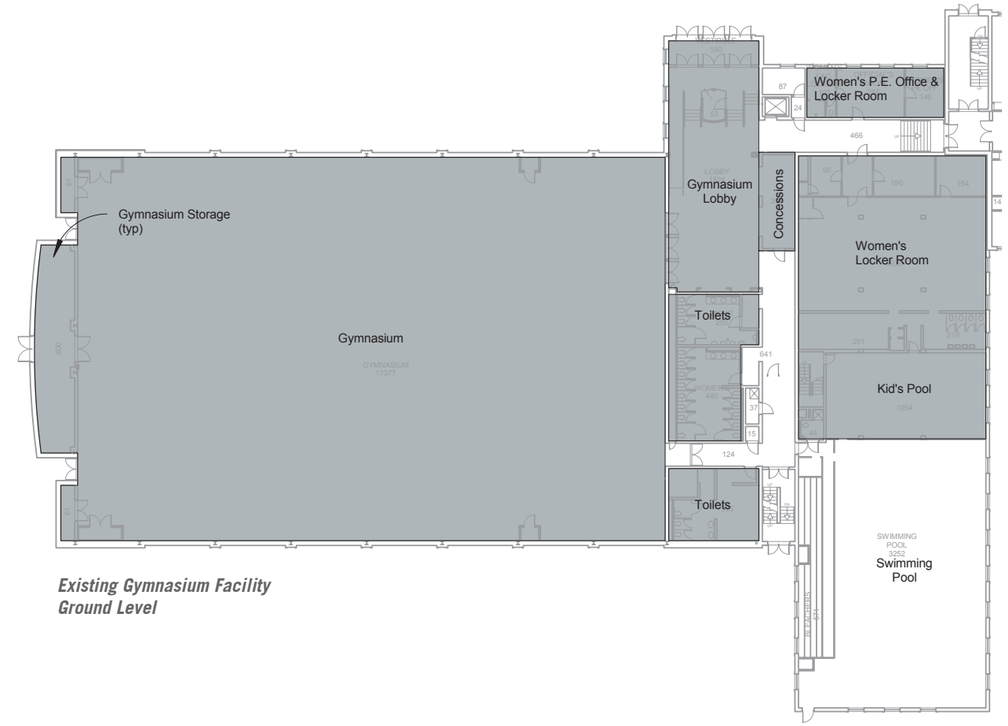


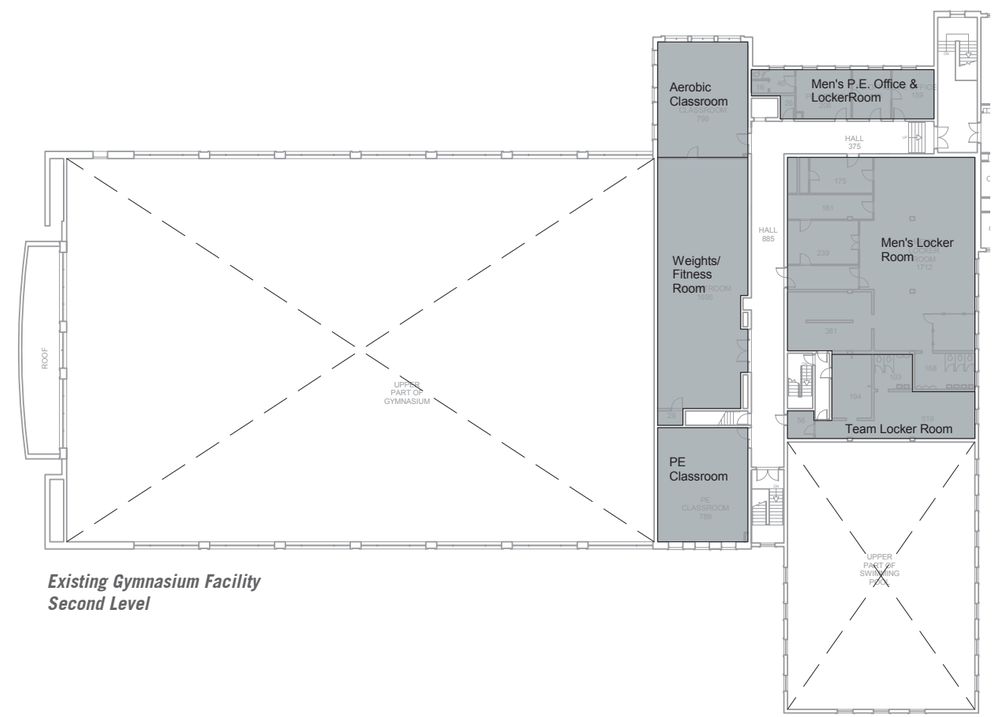
Table 12 - Physical Education Program

Spaces	No.	T.S.	Students	Area (SF)
		total		
Physical Education Spaces				
Gymnasium (exist.)	1			17,377
Main Pool				demolished
Kid's Pool (to be repurposed)	1			1,057
Gymnasium Lobby (exist.)	1			1,839
Gymnasium Storage (exist.)	7			841
				21,114
Physical Education Support				
Team Locker Room (exist.)	1			828
Men's Locker Room (exist.)	1			2,837
Women's Locker Room (exist.)	1			2,900
Public Toilet Room	4			1,280
Concessions	1			234
Office/Staff Lockers (exist.)	5			994
PE Classroom (exist.)	1	1	18	789
Aerobic Classroom (exist.)	1	1	18	799
Weights/Fitness Room (exist.)	1	1	18	1,695
				12,356
Grand total (net)		**3**	**54**	**33,470**
Grand total (gross)				**40,537**

*T.S. = Teaching Stations



Existing Gymnasium Facility
Ground Level



Existing Gymnasium Facility
Second Level

Table 13 - Music Education Program

	per space			*total*			
Spaces	**T.S.**	**Students**	**No.**	**T.S.**	**Students**	**Area (SF)**	**Subtotal (SF)**
Music							
Band Rehearsal	1	18	1	1	18	1,400	1,400
General Music Room	1	18	1	1	18	900	900
Orchestra Rehearsal	1	18	1	1	18	1,000	1,000
Vocal Music	1	18	1	1	18	900	900
Ensemble Room	-	16	1	-	16	300	300
Practice Room	-	-	2	-	-	80	160
Staff Office	-	-	4	-	-	100	400
Storage	-	-	2	-	-	150	300
Instrument Storage	-	-	1	-	-	300	300
							5,660
Grand total				**4**	**88**		**5,660**

*T.S. = Teaching Stations

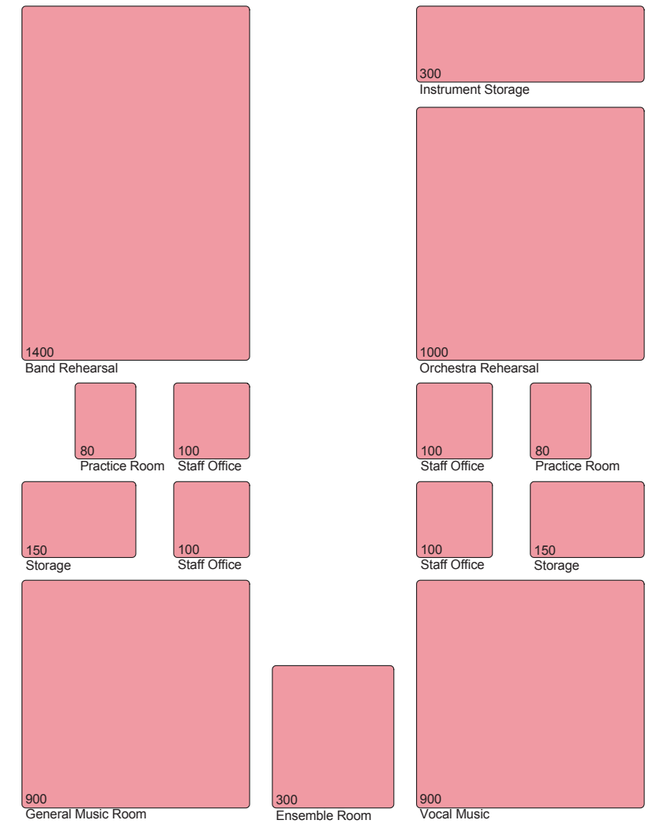
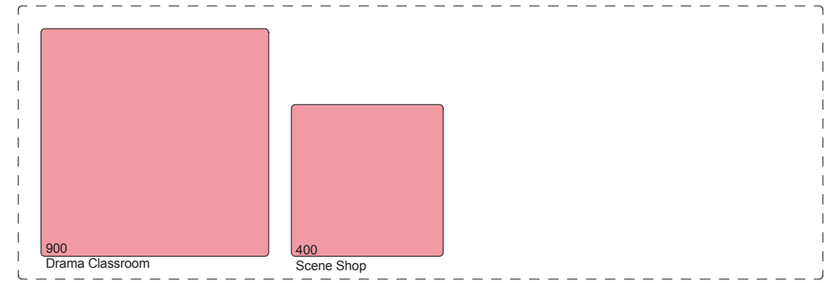


Table 14 - Drama and Performance Arts Program

Spaces	No.	Area (SF)	Subtotal (SF)
Drama			
Costume Storage	1	500	500
Drama Classroom	1	900	900
			1,400
Performance Area			
Stage	1	2,500	2,500
Control/Lighting/Sound Room	1	200	200
Dressing Rooms/Restrooms	2	300	600
Prop/Scene/Costume Storage	1	500	500
Scene/Project Shop	1	500	500
			4,300
Grand total			**5,700**

Drama



Performance Space

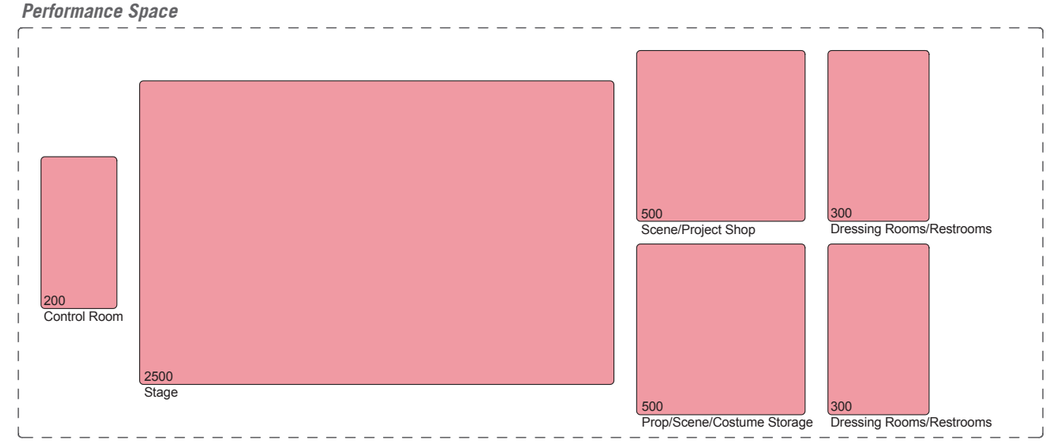


Table 15 - Building Support / Storage Program

Spaces	No.	Area (SF)	Subtotal (SF)
Building Support			
Facilities Office	1	120	120
Receiving	1	400	400
Workshop/Shop	1	250	250
Building Maintenance-Supplies	1	400	400
General Building Storage	2	500	1,000
Mechanical Equipment Rooms	4	1,500	6,000
Electrical Service	1	1,000	1,000
Communications	4	50	200
Custodial	4	75	300
			9,670
Grand total			**9,670**

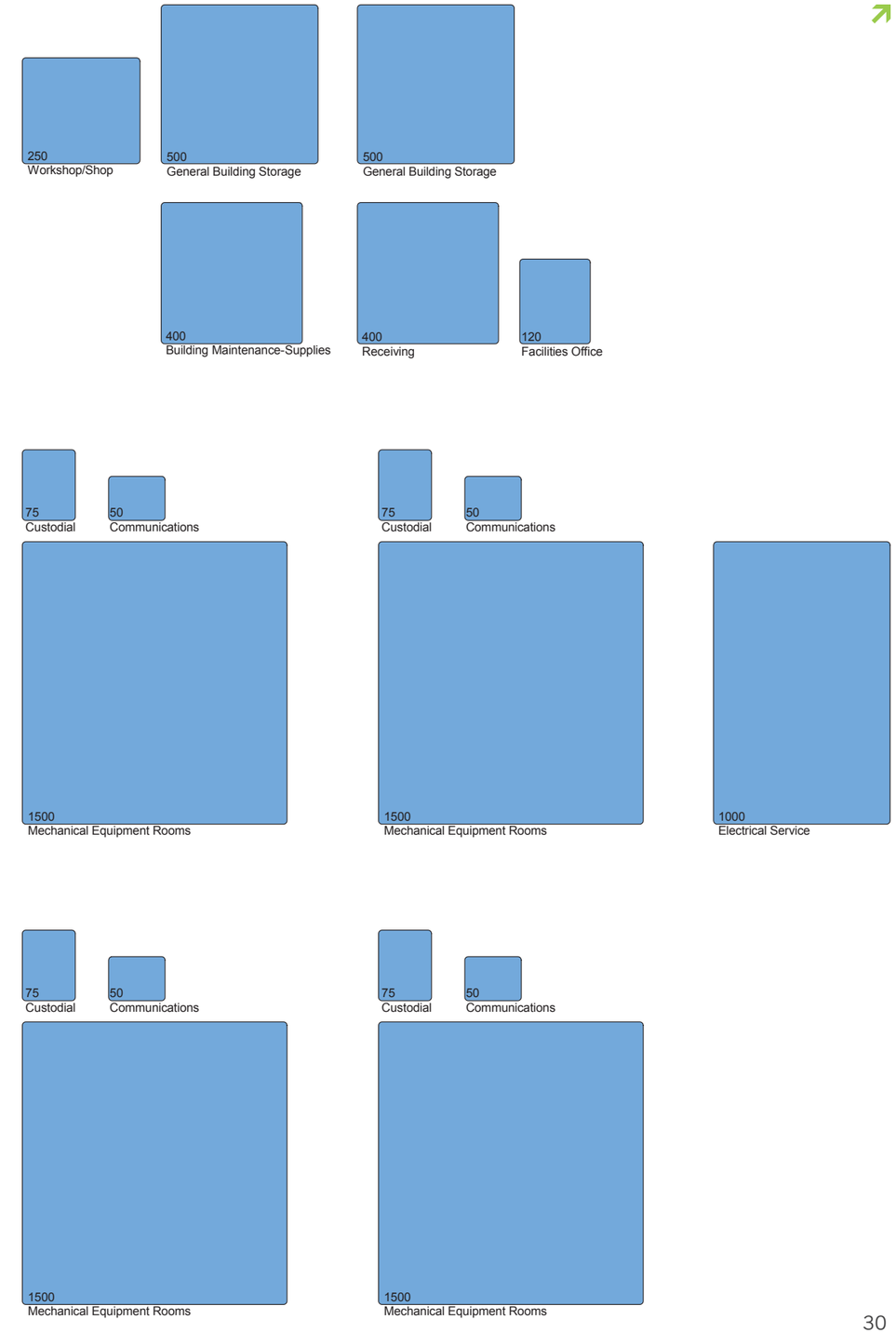
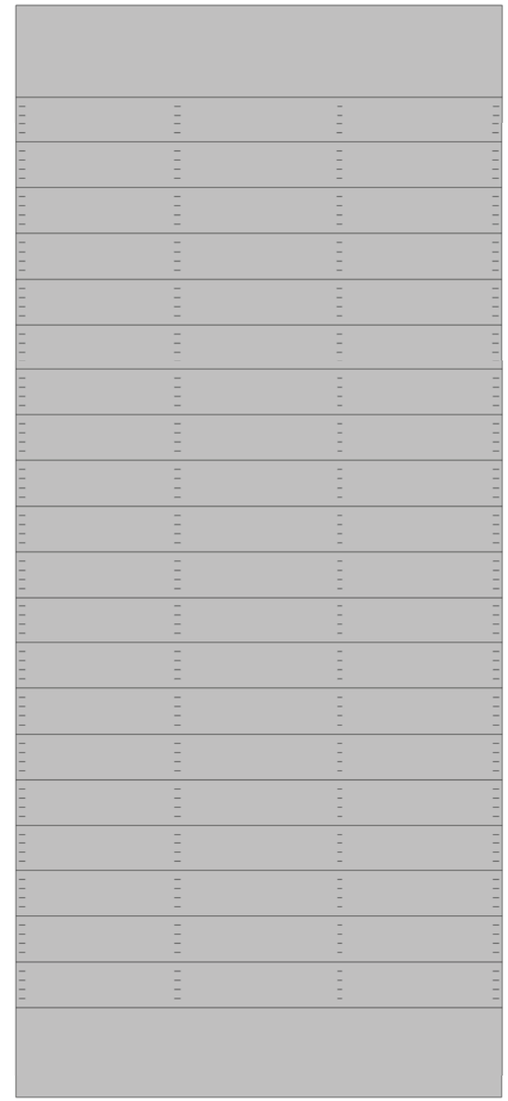
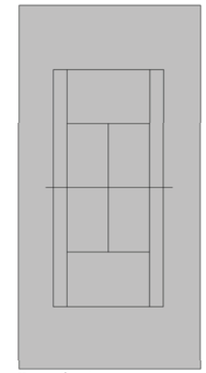


Table 16 - Exterior Physical Education Program

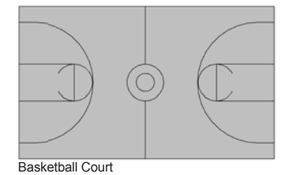
Spaces	No.
Exterior Physical Education	
CDC Playground	1
K-5 Playground	1
Basketball Court	2
Football/Soccer/Practice Field	1
Tennis Court	2



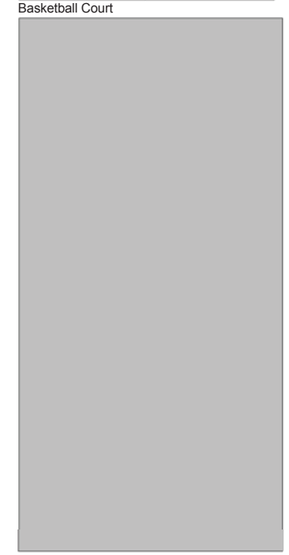
Football/Soccer/Practice Field



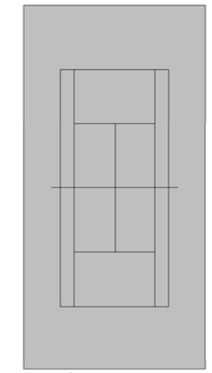
Tennis Court



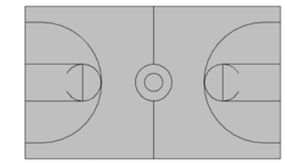
Basketball Court



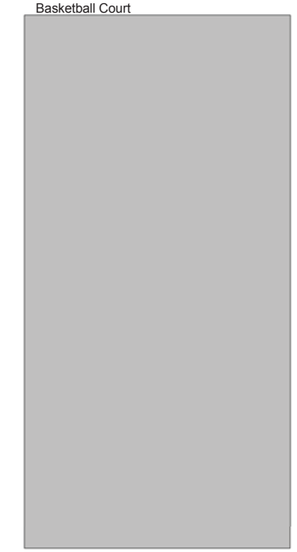
CDC Playground



Tennis Court



Basketball Court



K-5 Playground

Preliminary Building Concepts

Two building concept options were developed to facilitate the expansion of the existing Malcolm Price Laboratory School into a Statewide Research and Development School. The first option identified proposes to renovate and add on to the academic area of the existing school to meet the program, code and environmental requirements. The second option proposes to demolish the existing academic area of the school and to replace it with new construction to meet the needs identified in the space program.

Each option was given equal opportunity to address the inclusion of the new program requirements, adhere to the current life safety, building and accessibility codes while achieving the mandatory sustainability goals established by the Board of Regents. While there are inherent limitations to the renovation option, each building concept includes these essential upgrades and improvements:

- The addition of an increased receiving area, cafeteria, CDC, commons and project areas;
- Technology upgrades facilitate the educational transition from dedicated computer labs to decentralized laptop use within the classroom space;
- Network infrastructure is upgraded to current technological standards;
- Interior finishes are upgraded for durability, sustainability, are procured from local facilities and made of regionally available materials when possible;
- Healthy interior finishes are used to reduce airborne toxins and promote high indoor environmental quality;
- All classrooms, corridors, and exit stair enclosures are constructed with code-compliant fire rated partitions while providing superior acoustic performance for an enhanced educational environment;
- All interior doors and glazed openings will be installed with the required fire ratings;
- All programmed spaces will adhere to the regulations in the American with Disabilities Act;
- The exterior envelope will use insulated glass window units along with high-performance wall assemblies to enhance thermal efficiency and promote high quality indoor spaces regarding air and daylight;
- The building will be equipped with an automatic fire sprinkler system;
- All areas of the building will be air-conditioned;
- The mechanical system will use a vertical closed loop geoexchange system combined with ground source heat pumps to heat and cool the building. These systems are the most energy-efficient, environmentally clean, and cost-effective space conditioning systems available with a relatively short payback period;
- The electrical system will be completely upgraded to provide for current and future demand.

Preliminary site and plan diagrams were developed to illustrate how the building concepts are organized and how they may functionally address the expanded requirements of a Statewide Research and Development School.

Option: Renovation

AREA SUMMARY (square feet)

RENOVATION	178,412
NEW CONSTRUCTION	11,333
TOTAL	189,745

DESCRIPTION

The renovation option proposes to retain and renovate the entire academic area, athletic facility and auditorium. The gymnasium is relatively new, having been reconstructed after a fire in 1995, and would be retained in its entirety with no planned renovation. This option proposes to repurpose the swimming pool area for the academic program and also proposes to add a small addition for a new commons and second level media center.

EDUCATIONAL ORGANIZATION

- The fundamental organization of the teaching areas would largely remain as currently organized due to the physical constraints of the building footprint.
- Each grade level would have non-centralized project/team areas for interdisciplinary opportunities.

SUSTAINABILITY (See Sustainability section for more detail)

The renovation option could safely achieve LEED Silver certification using LEED for Schools 2009. Due to the embedded spatial restrictions of the existing building, higher levels of sustainability/efficiency could only be achieved with a higher cost. By reusing 75% of the existing structure, this option would have an additional LEED point (MRc1.1) available that the new construction option would not have available.

BENEFITS

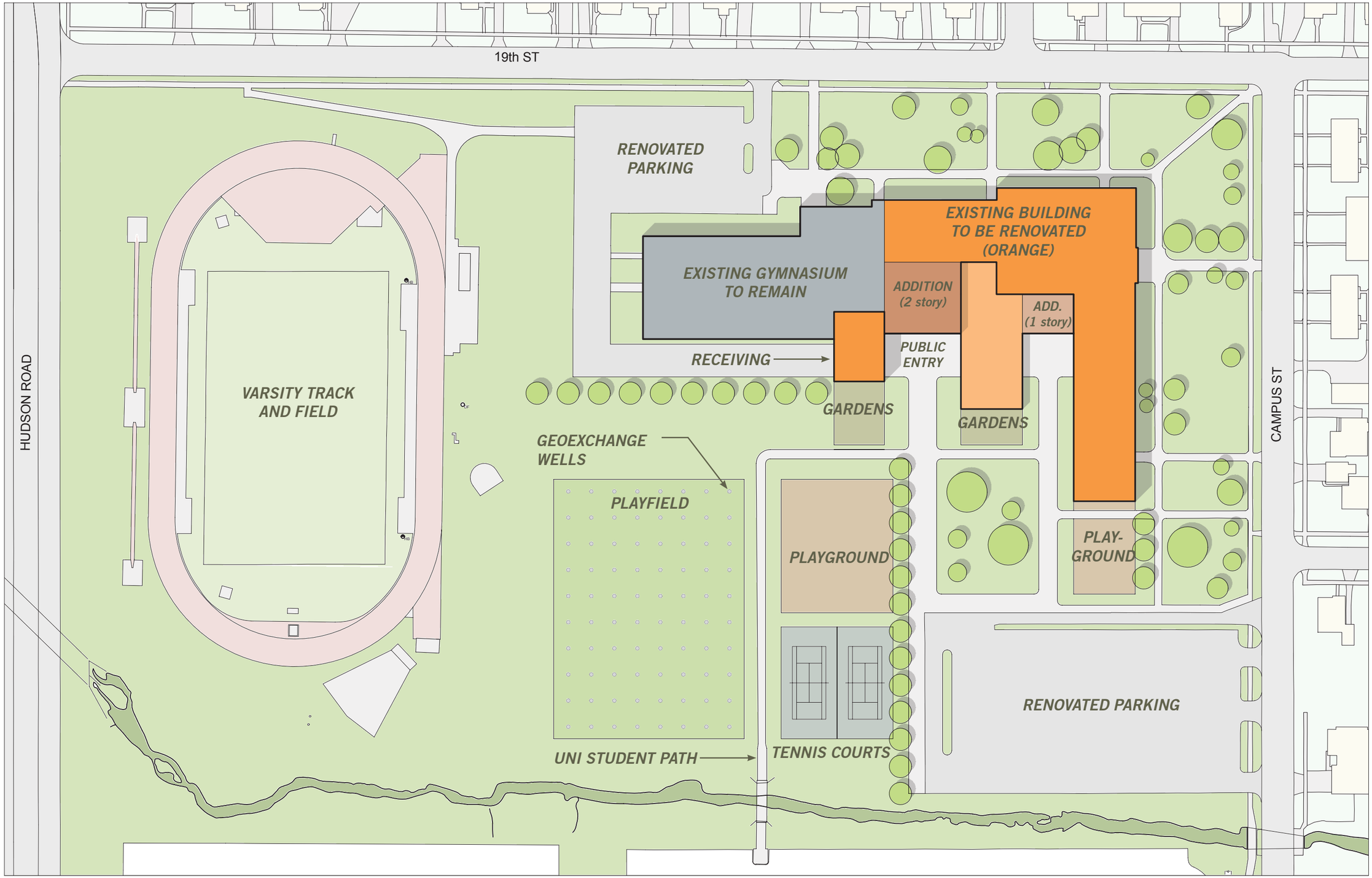
- The remodeling and renovation of the existing facility could be done incrementally over several years. Heavy and invasive construction could be done during summer months when the facility is less occupied or not in session.
- The existing superstructure could largely be reused since the basic structure appears to be very sound.

CONSTRAINTS

- Many of the current room and room sizes would need to remain in their current configuration due to the buildings narrow floor width.
- The fundamental circulation pattern would remain largely as it exists in order to reuse the existing structure.
- Most of the existing rooms would need to be entirely demolished down to bare structure and remodeled to meet current life safety, building and accessibility codes.
- Completely new above ceiling mechanical ductwork would have to be installed for the required heating, cooling, and ventilation systems along with a required fire sprinkler system and electrical distribution lines.
- The corridors would need to be completely redesigned since the current doorways do not meet ADA regulations. This will decrease the available area in the corridors or in the classrooms either or which will be detrimental to the function of the school.
- Since the floor slabs and grade cannot be significantly modified, numerous ramps would need to added to each exit to comply with ADA regulations.
- If phasing the construction cannot be accomplished, off-site temporary facilities would need to be identified to accommodate a potential 2 year construction schedule. (estimated cost up to $2 million - not shown in preliminary budget)

PROJECT COST (see Budget Section for detailed cost breakdown)

Estimated Project Cost: *$30,070,354*



STATEWIDE RESEARCH AND DEVELOPMENT SCHOOL - University of Northern Iowa

SITE PLAN - *Renovation of Existing Facility*

NORTH

0' 25' 50' 100'

scale 1:100

PERKINS + WILL

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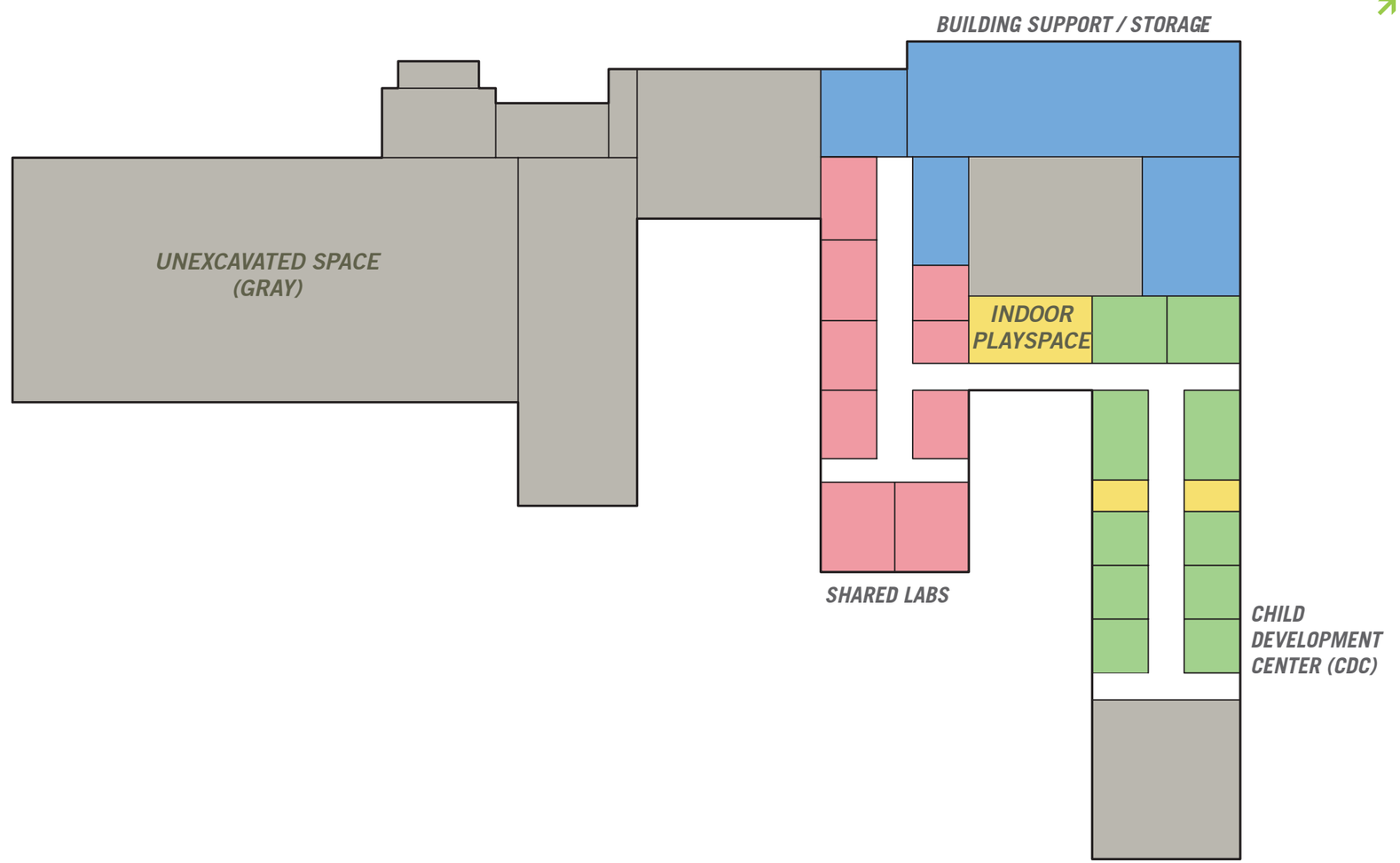

- Student Learning
- Student Learning Resources
- Shared Learning Area
- Administration/Faculty
- Commons
- Dining and Food Service
- Media Center
- Performance
- Physical Education
- Building Support/Storage
- Public Toilets
- Circulation

STATEWIDE RESEARCH AND DEVELOPMENT SCHOOL - University of Northern Iowa

PROGRAM PLAN - *Renovation of Existing Facility - Basement Level*

NORTH

0' 15' 30' 60'

scale 1:60

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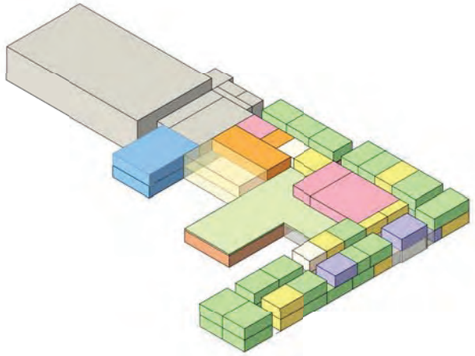

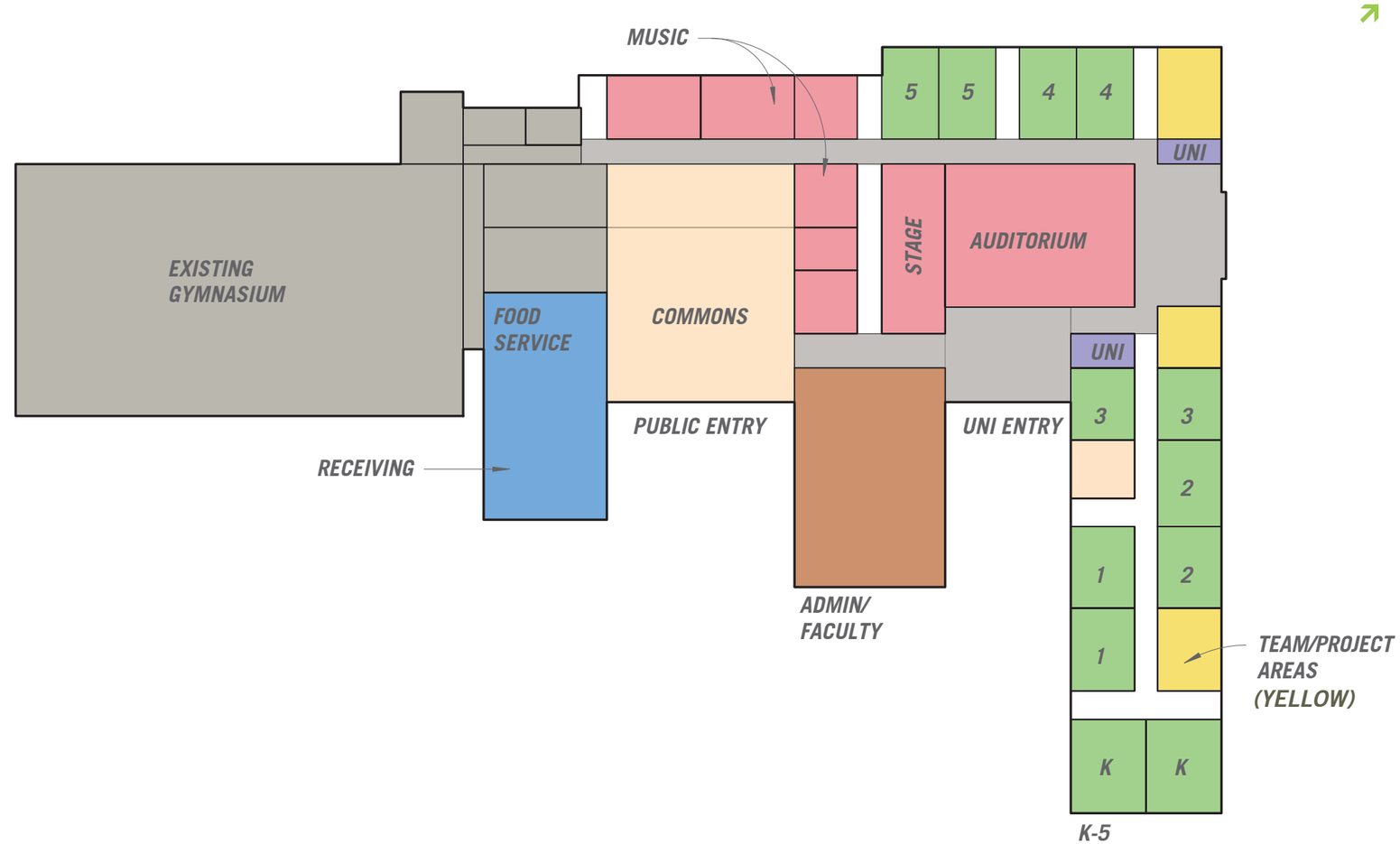

- Student Learning
- Student Learning Resources
- Shared Learning Area
- Administration/Faculty
- Commons
- Dining and Food Service
- Media Center
- Performance
- Physical Education
- Building Support/Storage
- Public Toilets
- Circulation

STATEWIDE RESEARCH AND DEVELOPMENT SCHOOL - University of Northern Iowa

PROGRAM PLAN - *Renovation of Existing Facility - Ground Level*

NORTH

0' 15' 30' 60'

scale 1:60

PERKINS + WILL

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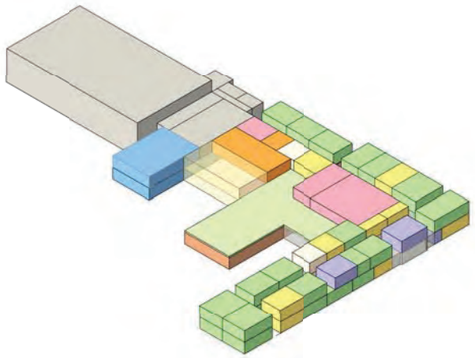

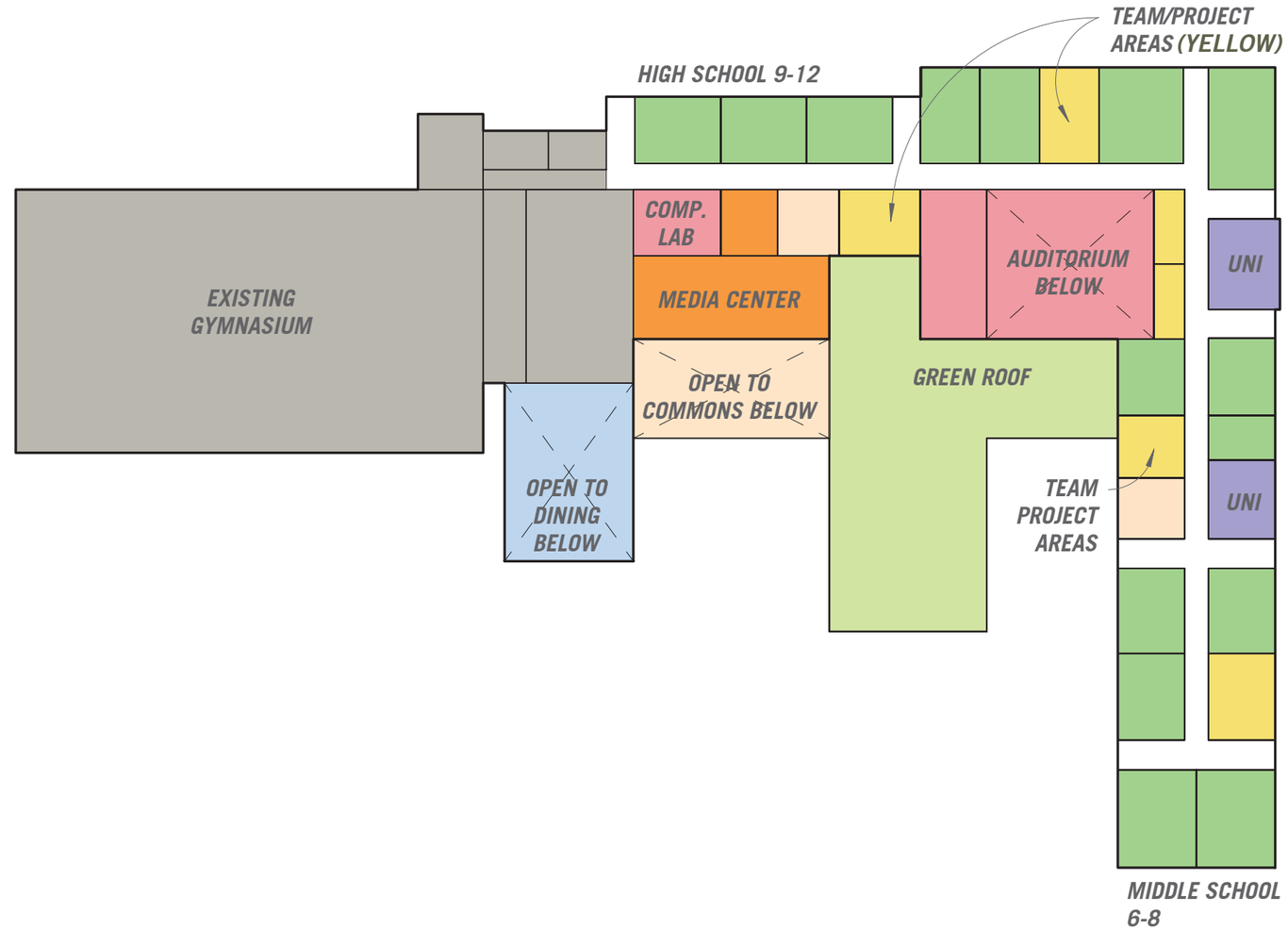

- Student Learning
- Student Learning Resources
- Shared Learning Area
- Administration/Faculty
- Commons
- Dining and Food Service
- Media Center
- Performance
- Physical Education
- Building Support/Storage
- Public Toilets
- Circulation

STATEWIDE RESEARCH AND DEVELOPMENT SCHOOL - University of Northern Iowa

PROGRAM PLAN - *Renovation of Existing Facility - Second Level*

NORTH

0' 15' 30' 60'

scale 1:60

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Option: New Construction

AREA SUMMARY (square feet)

RENOVATION	39,500
NEW CONSTRUCTION	137,354
TOTAL	176,854

DESCRIPTION

The new construction option would demolish and reconstruct the entire academic area of the existing school. This option proposes to retain and renovate the athletic facility except for the swimming pool wing which will be repurposed for academic functions. The gymnasium is relatively new, having been reconstructed after a fire in 1995, and would be retained in its entirety with no planned renovation.

EDUCATIONAL ORGANIZATION

- Teaching areas such as the Child Development Center (CDC), elementary, middle, and high school are suited to provide identity and distinctiveness from the other teaching groups.
- Grade levels are grouped around centralized team/project areas for interdisciplinary opportunities.
- University classrooms are provided for each teaching area and are centrally located near a project area for collaboration and connectivity.
- Shared areas such as the library/media center, commons and cafeteria would be centrally located providing community and identity. This reduces the amount of traffic through grade levels and provides for a quieter and more productive learning environment.

SUSTAINABILITY (See Sustainability section for more detail)

The new construction option could safely achieve LEED Silver certification using LEED for Schools 2009. Due to more opportunities inherent to new construction, higher levels of sustainability/efficiency could be achieved with little to no cost increase.

BENEFITS

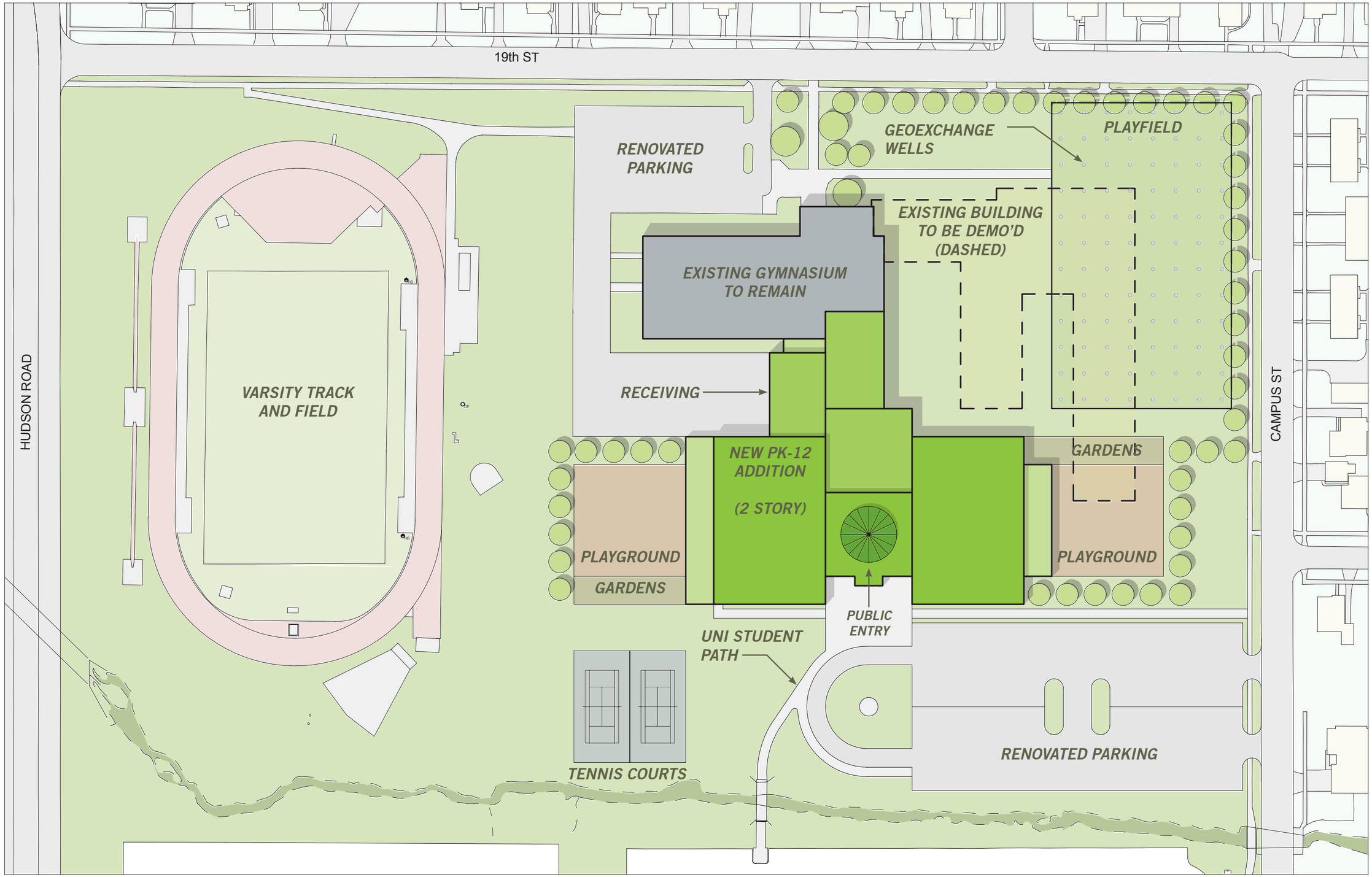
- The academic area of the building would be designed specifically to support the current and future educational vision of the Statewide Research and Development School.
- All of the classrooms areas of the building would be of new construction which would immediately be compliant with current life safety and accessibility codes and standards.
- The floor levels could be adjusted to align with the existing gym. floor levels to address accessibility issues.
- Ineffectively sized program & circulation areas within the existing facility would be constructed to proper size.
- The mechanical, electrical, plumbing and communications systems within the new construction would meet current codes, standards, efficiency and environmental standards at a lower cost than installing the same systems in the renovated space due to the difficulties in routing options within an existing structure.
- The building would have a longer life expectancy (50+ years).

CONSTRAINTS

- The construction would need to be planned as much as possible to avoid the existing facility. However, some portions of the building at the athletic facility would have to be demolished prior to the completion of the new building which could cause some significant challenges over a potential construction period of up to two years.
- Temporary entrances for the existing facility would need to be utilized during construction.
- The existing outdoor playfields, ball courts and playgrounds would be compromised due to construction activity so smaller and temporary structures would have to be used.

PROJECT COST (see Budget Section for detailed cost breakdown)

Estimated Project Cost: *$31,012,783 (3% premium over renovation)*



STATEWIDE RESEARCH AND DEVELOPMENT SCHOOL - University of Northern Iowa

SITE PLAN - *New Construction - Option 1*

NORTH

0' 25' 50' 100'

scale 1:100

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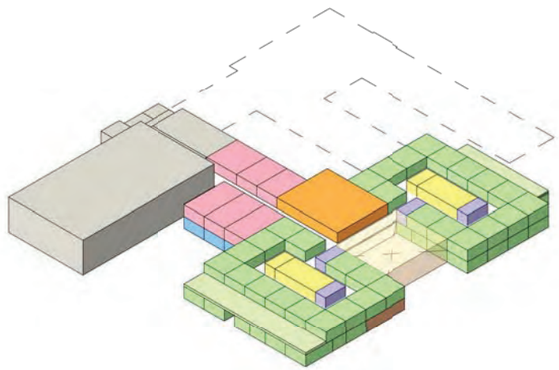

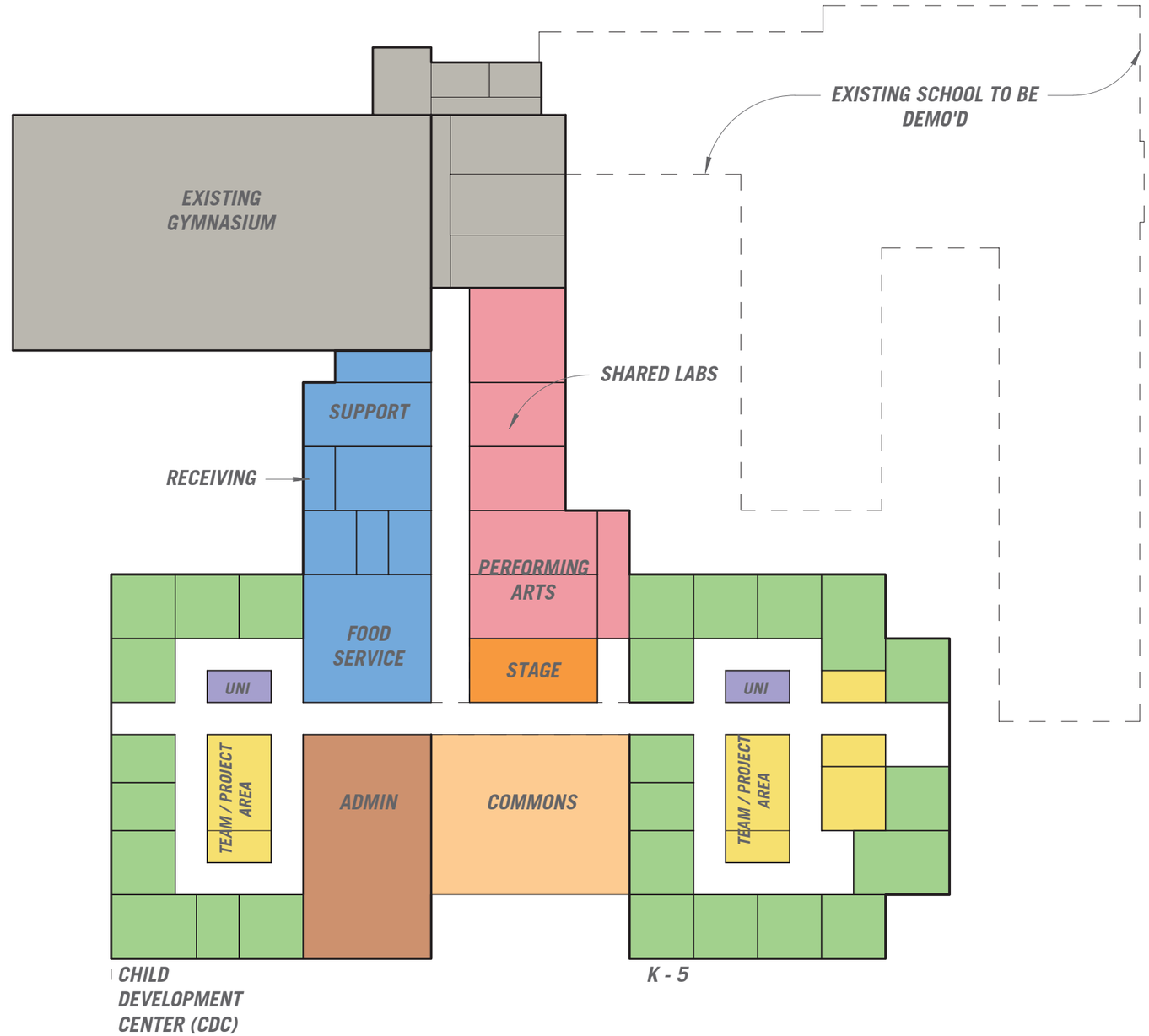

- Student Learning
- Student Learning Resources
- Shared Learning Area
- Administration/Faculty
- Commons
- Dining and Food Service
- Media Center
- Performance
- Physical Education
- Building Support/Storage
- Public Toilets
- Circulation

STATEWIDE RESEARCH AND DEVELOPMENT SCHOOL - University of Northern Iowa

PROGRAM PLAN - *New Construction - Option 1 - Ground Level*

NORTH

0' 15' 30' 60'

scale 1:60

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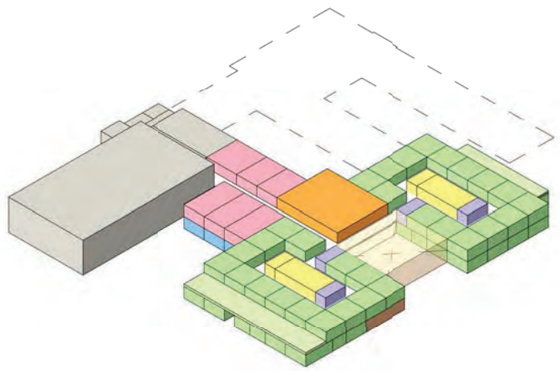

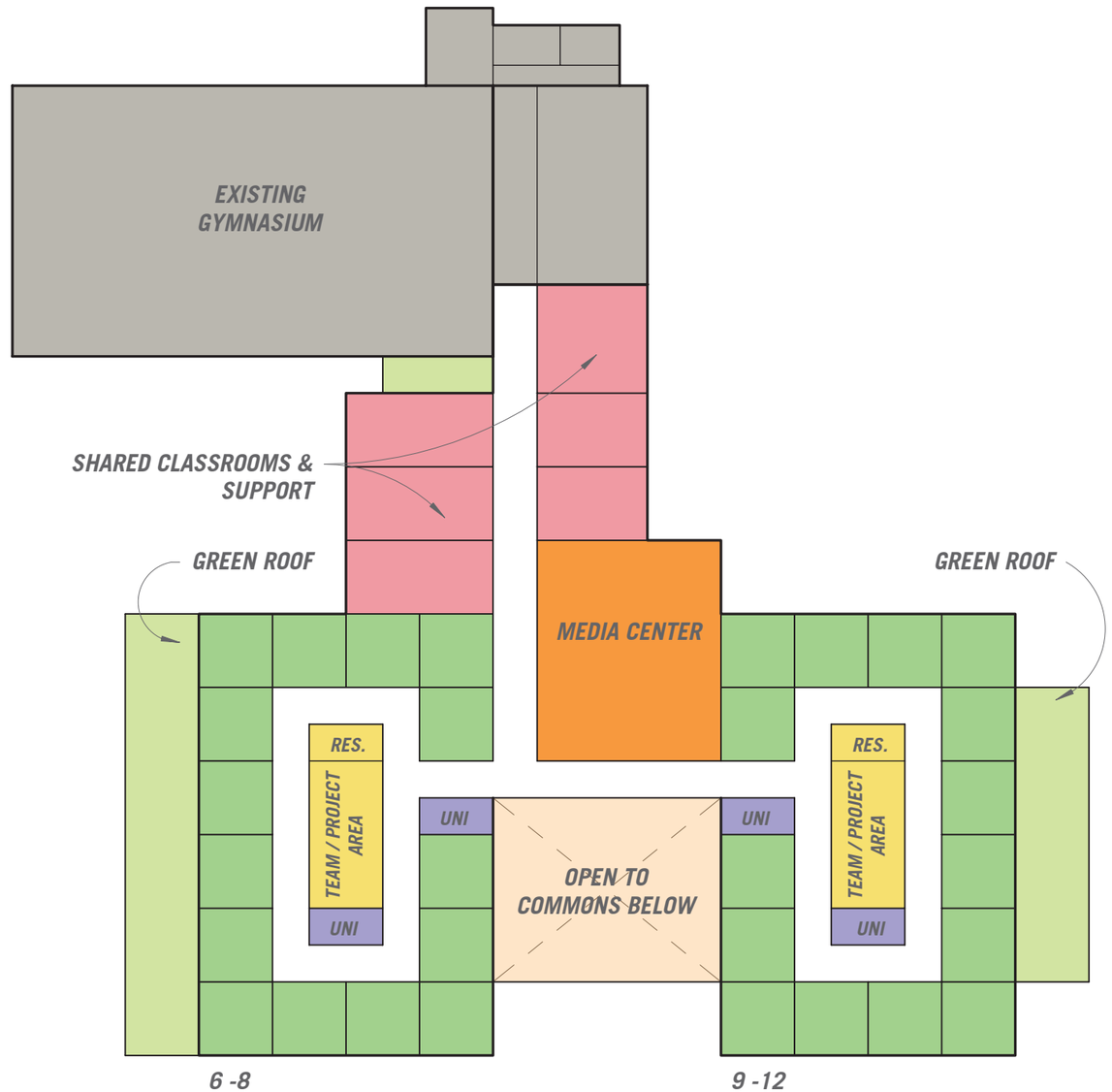

- Student Learning
- Student Learning Resources
- Shared Learning Area
- Administration/Faculty
- Commons
- Dining and Food Service
- Media Center
- Performance
- Physical Education
- Building Support/Storage
- Public Toilets
- Circulation

STATEWIDE RESEARCH AND DEVELOPMENT SCHOOL - University of Northern Iowa

PROGRAM PLAN - *New Construction - Option 1 - Second Level*

NORTH

0' 15' 30' 60'

scale 1:60

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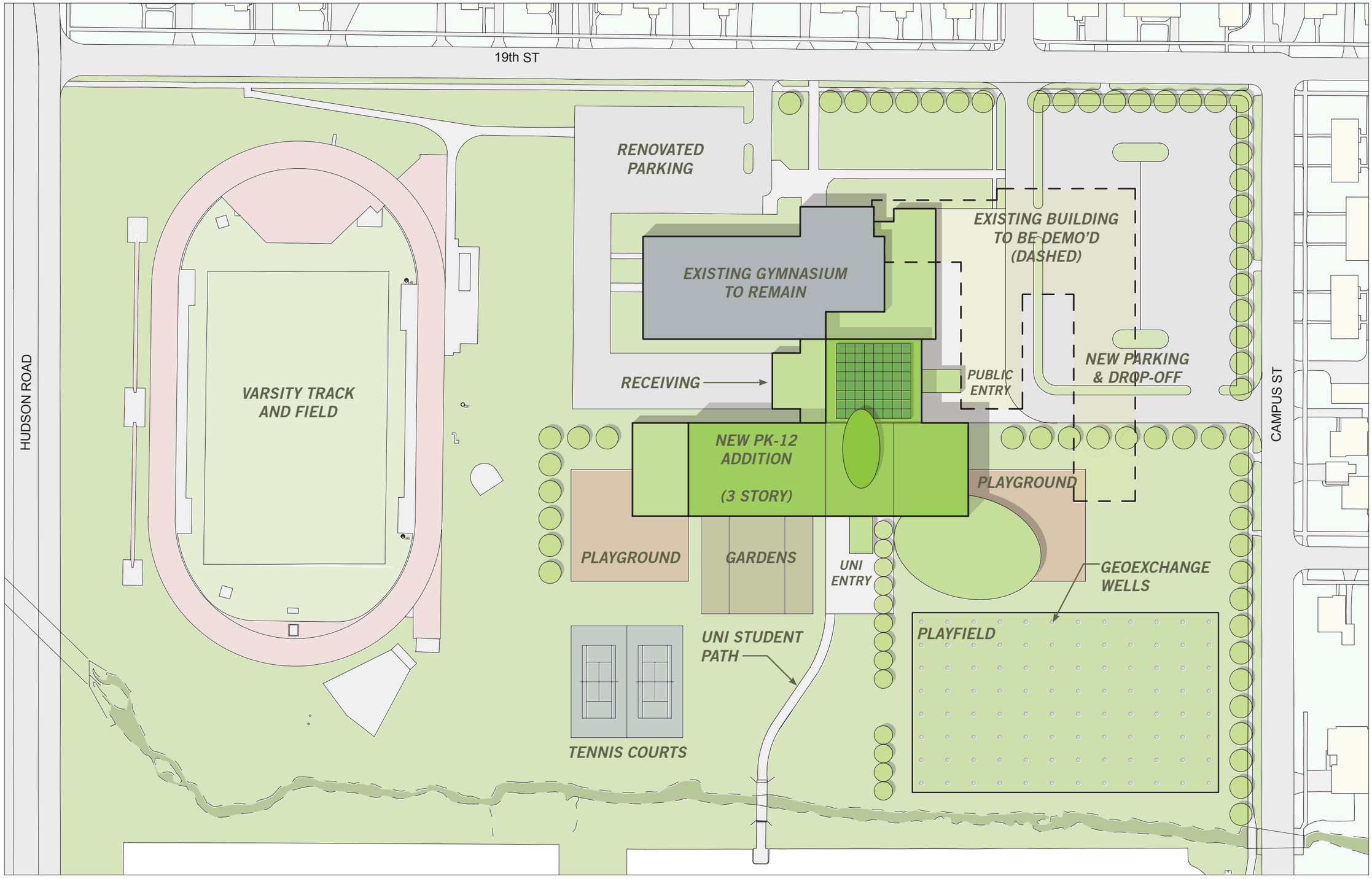

STATEWIDE RESEARCH AND DEVELOPMENT SCHOOL - University of Northern Iowa

SITE PLAN - *New Construction - Option 2*

NORTH

0' 25' 50' 100'

scale 1:100

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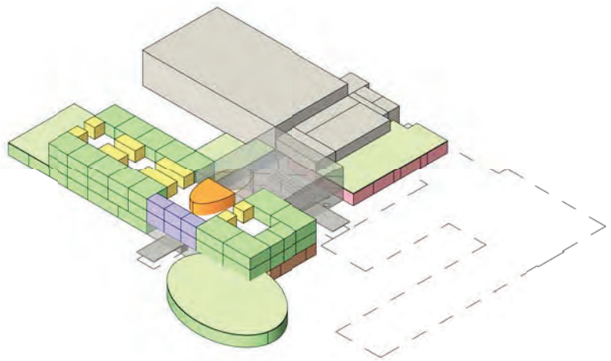

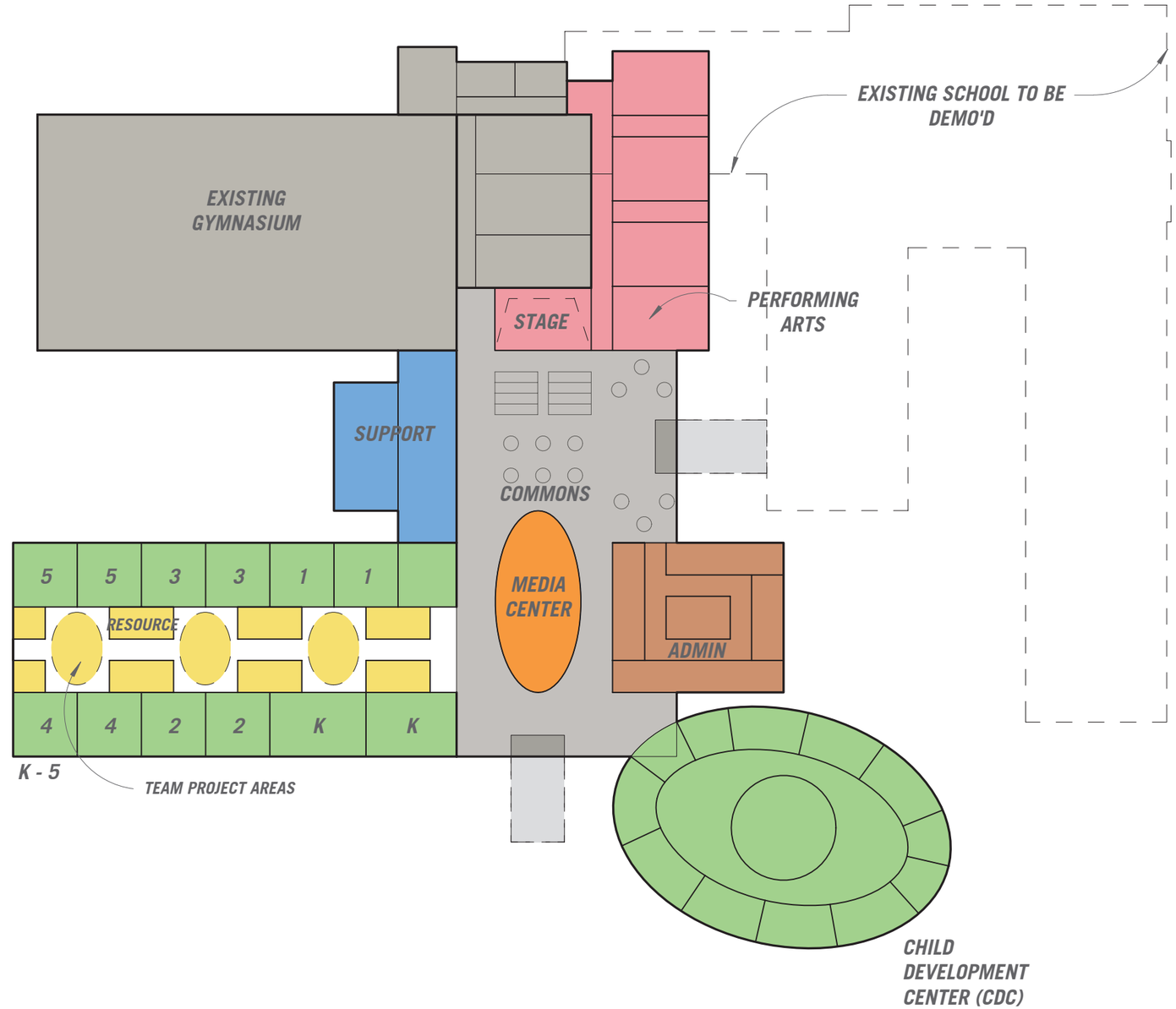

- Student Learning
- Student Learning Resources
- Shared Learning Area
- Administration/Faculty
- Commons
- Dining and Food Service
- Media Center
- Performance
- Physical Education
- Building Support/Storage
- Public Toilets
- Circulation

STATEWIDE RESEARCH AND DEVELOPMENT SCHOOL - University of Northern Iowa

PROGRAM PLAN - *New Construction - Option 2 - Ground Level*

NORTH

0' 15' 30' 60'

scale 1:60

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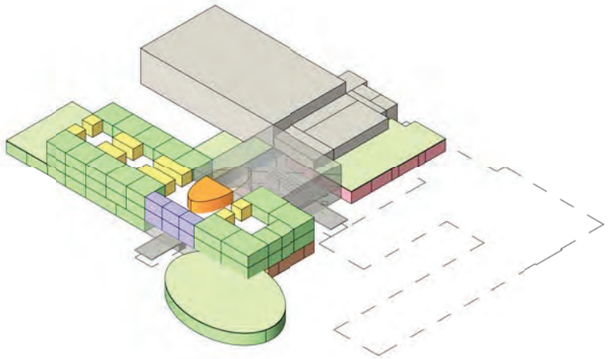

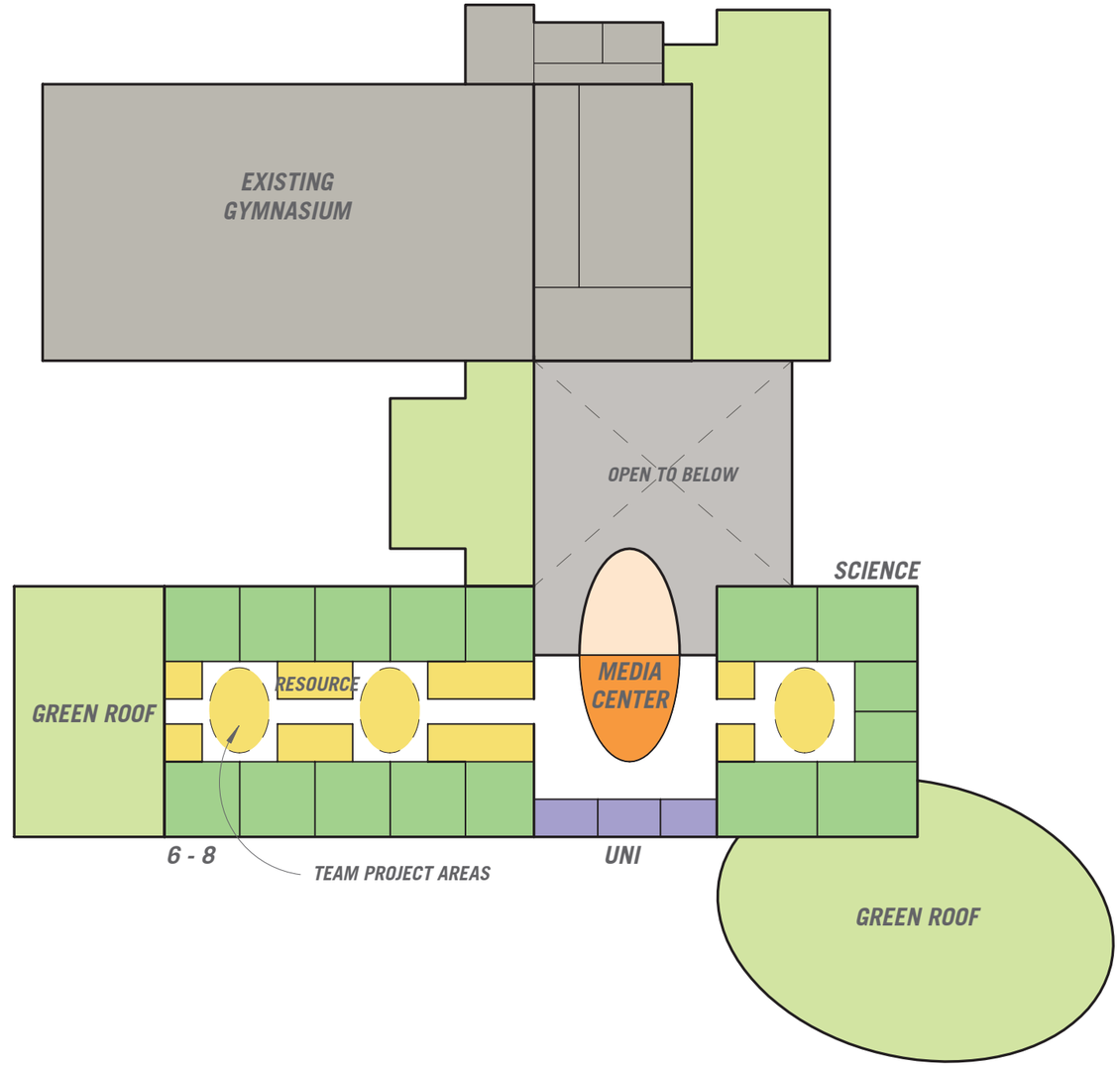

- Student Learning
- Student Learning Resources
- Shared Learning Area
- Administration/Faculty
- Commons
- Dining and Food Service
- Media Center
- Performance
- Physical Education
- Building Support/Storage
- Public Toilets
- Circulation

STATEWIDE RESEARCH AND DEVELOPMENT SCHOOL - University of Northern Iowa

PROGRAM PLAN - *New Construction - Option 2 - Second Level*

NORTH

0' 15' 30' 60'

scale 1:60

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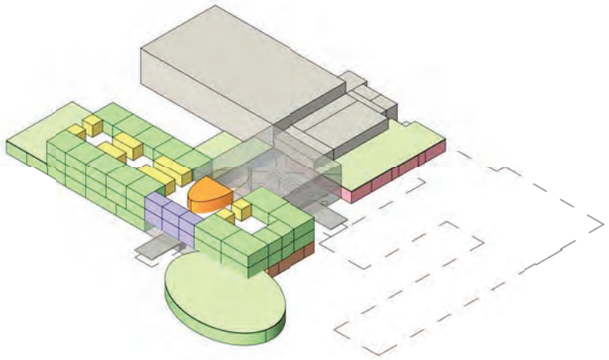

- Student Learning
- Student Learning Resources
- Shared Learning Area
- Administration/Faculty
- Commons
- Dining and Food Service
- Media Center
- Performance
- Physical Education
- Building Support/Storage
- Public Toilets
- Circulation

STATEWIDE RESEARCH AND DEVELOPMENT SCHOOL - University of Northern Iowa

PROGRAM PLAN - *New Construction - Option 2 - Third Level*

NORTH

0' 15' 30' 60'

scale 1:60

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Sustainability Assessment

The sustainability options and opportunities were assessed for both renovation and new construction building options using the LEED 2009 for Schools-New Construction and Major Renovations rating system. Due to the amount of interior demolition and reconstruction and a complete systems upgrade, the renovation building option would use the same rating system as the new construction option.

Each option has the potential of achieving a Silver level LEED certification. This would comply with the Board of Regents mandate of 'all major projects (new buildings and major capital renovations) initiated after April 1, 2009 shall meet or exceed the U.S. Green Building Council's guidelines for silver level LEED certification.'(1) Developed by the U.S. Green Building Council (USGBC), 'LEED is an internationally recognized green building certification system, providing third-party verification that a building or community was designed and built using strategies aimed at improving performance across all the metrics that matter most: energy savings, water efficiency, CO2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts.' (2)

Key Sustainable Targets achievable by each option include the following:

- Reduced energy consumption by 30/36% (renovation/new) compared to standard K-12 schools;
- Reduced potable water use by 30% compared to standard K-12 schools;
- Divert +50% of construction waste from landfills;
- Use materials with high recycled content and/or are locally manufactured regional materials;
- Use Forest Stewardship Council (FSC) wood throughout the facility;
- Use energy efficient lighting and lighting systems combined with daylight sensors and dimming;
- Use U.S. EPA EnergyStar components or U.S. EPA WaterSense appliances;
- Conserve energy at its point of consumption through dynamic measurement and verification systems

Due to the inherent restrictions of using an existing building footprint and structure, the new construction option has great potential in achieving higher certification levels than the renovation option. The new building form affords more opportunities in developing the site, effectively integrating the stormwater design with the building, optimizing the use of materials with high recycled content in the buildings superstructure and interior and providing an acoustically superior environment for the faculty and students. There is also increased potential in embedding efficiencies into the building's form, orientation and spatial organization which will continually boost the energy and water efficiency of the building. These efficiency improvements will increase the savings for the life of the building and potentially decrease the overall payback period.

1. Campus Sustainability - Part II - A Board of Regents Initiative. Agenda Item 15, March 19, 2009. Patrice Sayre, Diana Gonzalez. http://www.vpaf.uni.edu/energy/docs/Campus%20Sustainability%20BOR%20Initiative%20Part%20II.pdf.
2. http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1988.

Sustainability: Renovation

Table 17 - Preliminary LEED Checklist for Renovation Option

LEED-NC

LEED Schools Version 2009 PRELIMINARY Forecast - RENOVATION

Perkins+Will

Statewide Research and Development School — 15-Jun-10

$	Y	N	?			
	17	4	3	**Sustainable Sites**		24 Points
	Y			Prereq 1	**Construction Activity Pollution Prevention**	Required
	Y			Prereq 1	**Environmental Site Assessment**	Required
	1			Credit 1	**Site Selection**	1
	4			Credit 2	**Development Density & Community Connectivity**	4
		1		Credit 3	**Brownfield Redevelopment**	1
	4			Credit 4.1	**Alternative Transportation**, Public Transportation Access	4
	1			Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms	1
	2			Credit 4.3	**Alternative Transportation**, Low-Emitting and Fuel-Efficient Vehicles	2
	2			Credit 4.4	**Alternative Transportation**, Parking Capacity	2
		1		Credit 5.1	**Site Development,** Protect of Restore Habitat	1
			1	Credit 5.2	**Site Development,** Maximize Open Space	1
		1		Credit 6.1	**Stormwater Design,** Quantity Control	1
		1		Credit 6.2	**Stormwater Design,** Quality Control	1
			1	Credit 7.1	**Heat Island Effect,** Non-Roof	1
	1			Credit 7.2	**Heat Island Effect,** Roof	1
	1			Credit 8	**Light Pollution Reduction**	1
			1	Credit 9	**Site Master Plan**	1
	1			Credit 10	**Joint Use of Facilities**	1

$	Yes	No	?			
	2	4	5	**Water Efficiency**		11 Points
	Y			Prereq 1	**Water Use Reduction 20%**	Required
			4	Credit 1	**Water Efficient Landscaping**, Reduce by 50% (2) 100% (4)	2 to 4
		2		Credit 2	**Innovative Wastewater Technologies**	2
	2	2		Credit 3	**Water Use Reduction**, 30% (2) 35% (3) 40% (4)	2 to 4
			1	Credit 4	**Process Water Use Reduction**	1

	17	12	4	**Energy & Atmosphere**		33 Points
	Y			Prereq 1	**Fundamental Commissioning of the Building Energy Systems**	Required
	Y			Prereq 2	**Minimum Energy Performance**	Required
	Y			Prereq 3	**Fundamental Refrigerant Management**	Required
	12	7		Credit 1	**Optimize Energy Performance** 12% /8% to 48% / 44% (2% Steps)	1 to 19
	2	5		Credit 2.1	**On-Site Re Energy** 1% (1) 3%(2) 5% (3) 7%(4) 9% (5) 11% (6) 13% (7)	1 to 7
			2	Credit 3	**Enhanced Commissioning**	2
	1			Credit 4	**Enhanced Refrigerant Management**	1
	2			Credit 5	**Measurement & Verification**	2
			2	Credit 6	**Green Power**	2

COST

zero — low — moderate — high

$	Yes	No	?			
	4	8	1	**Materials & Resources**		13 Points
	Y			Prereq 1	**Storage & Collection of Recyclables**	Required
	1	1		Credit 1.1	**Building Reuse**, Maintain 75% / 95%of Existing Walls, Floors & Roof	1 to 2
		1		Credit 1.2	**Building Reuse**, Maintain 50% of Interior Non-Structural Elements	1
	1	1		Credit 2	**Construction Waste Management**, Divert 50% / 75% from Disposal	1 to 2
		2		Credit 3	**Materials Reuse**, 5% / 10% Salvaged Materials	1 to 2
		2		Credit 4	**Recycled Content**, 10% / 20% (post-consumer + ½ pre-consumer)	1 to 2
	1	1		Credit 5	**Regional Materials**, 10% / 20% Extract, Process, Manfact'd Regionally	1 to 2
			1	Credit 6	**Rapidly Renewable Materials 2 1/2 %**	1
	1			Credit 7	**Certified Wood 50%**	1

$	Yes	No	?			
	14	3	2	**Indoor Environmental Quality**		19 Points
	Y			Prereq 1	**Minimum IAQ Performance**	Required
	Y			Prereq 2	**Environmental Tobacco Smoke** (ETS) **Control**	Required
	Y			Prereq 3	**Minimum Acoustical Performance**	Required
	1			Credit 1	**Outdoor Air Delivery Monitoring**	1
			1	Credit 2	**Increased Ventilation**	1
	1			Credit 3.1	**Construction IAQ Management Plan**, During Construction	1
	1			Credit 3.2	**Construction IAQ Management Plan**, Before Occupancy	1
	3			Credit 4	**Low-Emitting Materials**, Adh & Seal, Paint, Floor, Composite Wood & Ag	1 to 4
					Low-Emitting Materials, Furniture and Furnishings	
	1				**Low-Emitting Materials**, Ceiling and Wall Systems	
	1			Credit 5	**Indoor Chemical & Pollutant Source Control**	1
	1			Credit 6.1	**Controllability of Systems**, Lighting	1
	1			Credit 6.2	**Controllability of Systems**, Thermal Comfort	1
	1			Credit 7.1	**Thermal Comfort**, Design	1
	1			Credit 7.2	**Thermal Comfort**, Verification (7.1 Required)	1
	1	1		Credit 8.1	**Daylight & Views**, Daylight 75% / 95% of Classroom Spaces	1 of 2
		1			**Daylight & Views**, Daylight 75% Regular Space - 75% for Classrms Req'd	1
	1			Credit 8.2	**Daylight & Views**, Views for 90% of Spaces	1
		1		Credit 9	**Enhanced Acoustical Peformance**	1
			1	Credit 9	**Mold Prevention**	1

$	Yes	No	?			
	7	1	2	**Innovation & Design Process + Regional Priority**		10Points
	1			Credit 1.1	**Innovation in Design**: Green Education Center	1
	1			Credit 1.2	**Innovation in Design**: Low-Mercury Bulbs	1
			1	Credit 1.3	**Innovation in Design**:	1
			1	Credit 1.4	**Innovation in Design**:	1
	1			Credit 2	**LEED® Accredited Professional**	1
	1			Credit 3	**School as a Teaching Tool**	1
					Regional Priority Credit 1-4	
	3	1		RP Cr's	SSc2, SSc4.1, SSc4.2, SSc6.1, WEc2, MRc2(75%)	1 to 4
	Yes	No	?		List Reg'l Cr's Above Being Pursued: SSc2, SSc4.1, SSc4.2, SSc6.1	
	61	32	17	**Project Totals** (pre-certification estimates)		110 Points

Certified: 40-49 points Silver: 50-59 points Gold: 60-79 points Platinum: 80+ points

POTENTIAL CERTIFICATION LVL

*Estimated point range** **55-61**

Rating **Silver**

Additional points possible **17**

CONSTRUCTION COST IMPACT

6-7% (~5+ yr. payback)

Credits with no-low cost impact

45 credits

Credits with mod-high cost impact

12 credits

Credits with Savings Potential

(construction cost savings)

SSc4.4: Parking Capacity
SSc5: Site Development
MRc2: Constr. Waste Management

(lifecycle cost savings)

WEc1: Water Efficient Landscaping
WEc3: Water Use Reduction
WEc4: Process Water Use Reduct.
EAp1: Fundamental Commission'g
EAc1: Optimize Energy Perfor.
EAc5: Measurement & Verification

(productivity cost savings)

EQp1: Min. Acoust. Performance
EQc1: Outdoor Air Monitoring
EQc2: Increased Ventilation
EQc3: Constr. IAQ Management
EQc4: Low-emitting Materials
EQc5: Indoor Chemical Control
EQc6: Controllability of Systems
EQc7: Thermal Comfort
EQc8: Daylight and Views

Certified: 40 to 49 points — Silver: 50 to 59 points — Gold: 60 to 79 points — Platinum: 80+ points

* Includes a 10% credit contingency for preliminary point forecasting

Statewide Research and Development School, University of Northern Iowa: *Existing Facility Assessment and Preliminary Building Concepts*

Sustainability: New Construction

Table 18 - Preliminary LEED Checklist for New Construction Option

LEED-NC

LEED Schools Version 2009 PRELIMINARY Forecast - NEW CONSTRUCTION

Perkins+Will

Statewide Research and Development School — 15-Jun-10

$	Y	N	?			
	22	1	1	**Sustainable Sites**		24 Points
	Y			Prereq 1	**Construction Activity Pollution Prevention**	Required
	Y			Prereq 1	**Environmental Site Assessment**	Required
	1			Credit 1	**Site Selection**	1
	4			Credit 2	**Development Density & Community Connectivity**	4
		1		Credit 3	**Brownfield Redevelopment**	1
	4			Credit 4.1	**Alternative Transportation**, Public Transportation Access	4
	1			Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms	1
	2			Credit 4.3	**Alternative Transportation**, Low-Emitting and Fuel-Efficient Vehicles	2
	2			Credit 4.4	**Alternative Transportation**, Parking Capacity	2
			1	Credit 5.1	**Site Development,** Protect of Restore Habitat	1
	1			Credit 5.2	**Site Development,** Maximize Open Space	1
	1			Credit 6.1	**Stormwater Design,** Quantity Control	1
	1			Credit 6.2	**Stormwater Design,** Quality Control	1
	1			Credit 7.1	**Heat Island Effect,** Non-Roof	1
	1			Credit 7.2	**Heat Island Effect,** Roof	1
	1			Credit 8	**Light Pollution Reduction**	1
	1			Credit 9	**Site Master Plan**	1
	1			Credit 10	**Joint Use of Facilities**	1
$	Yes	No	?			
	2	4	5	**Water Efficiency**		11 Points
	Y			Prereq 1	**Water Use Reduction 20%**	Required
			4	Credit 1	**Water Efficient Landscaping**, Reduce by 50% (2) 100% (4)	2 to 4
		2		Credit 2	**Innovative Wastewater Technologies**	2
	2	2		Credit 3	**Water Use Reduction**, 30% (2) 35% (3) 40% (4)	2 to 4
			1	Credit 4	**Process Water Use Reduction**	1
	18	11	4	**Energy & Atmosphere**		33 Points
	Y			Prereq 1	**Fundamental Commissioning of the Building Energy Systems**	Required
	Y			Prereq 2	**Minimum Energy Performance**	Required
	Y			Prereq 3	**Fundamental Refrigerant Management**	Required
	13	6		Credit 1	**Optimize Energy Performance** 12% /8% to 48% / 44% (2% Steps)	1 to 19
	2	5		Credit 2.1	**On-Site Re Energy** 1% (1) 3%(2) 5% (3) 7%(4) 9% (5) 11% (6) 13% (7)	1 to 7
			2	Credit 3	**Enhanced Commissioning**	2
	1			Credit 4	**Enhanced Refrigerant Management**	1
	2			Credit 5	**Measurement & Verification**	2
			2	Credit 6	**Green Power**	2

COST

zero — low — moderate — high

$	Yes	No	?			
	4	8	1	**Materials & Resources**		13 Points
	Y			Prereq 1	**Storage & Collection of Recyclables**	Required
		2		Credit 1.1	**Building Reuse**, Maintain 75% / 95%of Existing Walls, Floors & Roof	1 to 2
		1		Credit 1.2	**Building Reuse**, Maintain 50% of Interior Non-Structural Elements	1
	1	1		Credit 2	**Construction Waste Management**, Divert 50% / 75% from Disposal	1 to 2
		2		Credit 3	**Materials Reuse**, 5% / 10% Salvaged Materials	1 to 2
	1	1		Credit 4	**Recycled Content**, 10% / 20% (post-consumer + ½ pre-consumer)	1 to 2
	1	1		Credit 5	**Regional Materials**, 10% / 20% Extract, Process, Manfact'd Regionally	1 to 2
			1	Credit 6	**Rapidly Renewable Materials 2 1/2 %**	1
	1			Credit 7	**Certified Wood 50%**	1
$	Yes	No	?			
	14	2	3	**Indoor Environmental Quality**		19 Points
	Y			Prereq 1	**Minimum IAQ Performance**	Required
	Y			Prereq 2	**Environmental Tobacco Smoke** (ETS) **Control**	Required
	Y			Prereq 3	**Minimum Acoustical Performance**	Required
	1			Credit 1	**Outdoor Air Delivery Monitoring**	1
			1	Credit 2	**Increased Ventilation**	1
	1			Credit 3.1	**Construction IAQ Management Plan**, During Construction	1
	1			Credit 3.2	**Construction IAQ Management Plan**, Before Occupancy	1
	3			Credit 4	**Low-Emitting Materials**, Adh & Seal, Paint, Floor, Composite Wood & Ag	1 to 4
					Low-Emitting Materials, Furniture and Furnishings	
	1				**Low-Emitting Materials**, Ceiling and Wall Systems	
	1			Credit 5	**Indoor Chemical & Pollutant Source Control**	1
	1			Credit 6.1	**Controllability of Systems**, Lighting	1
	1			Credit 6.2	**Controllability of Systems**, Thermal Comfort	1
	1			Credit 7.1	**Thermal Comfort**, Design	1
	1			Credit 7.2	**Thermal Comfort**, Verification (7.1 Required)	1
	1	1		Credit 8.1	**Daylight & Views**, Daylight 75% / 95% of Classroom Spaces	1 of 2
		1			**Daylight & Views**, Daylight 75% Regular Space - 75% for Classrms Req'd	1
	1			Credit 8.2	**Daylight & Views**, Views for 90% of Spaces	1
			1	Credit 9	**Enhanced Acoustical Peformance**	1
			1	Credit 9	**Mold Prevention**	1
$	Yes	No	?			
	8		2	**Innovation & Design Process + Regional Priority**		10Points
	1			Credit 1.1	**Innovation in Design**: Green Education Center	1
	1			Credit 1.2	**Innovation in Design**: Low-Mercury Bulbs	1
			1	Credit 1.3	**Innovation in Design**:	1
			1	Credit 1.4	**Innovation in Design**:	1
	1			Credit 2	**LEED® Accredited Professional**	1
	1			Credit 3	**School as a Teaching Tool**	1
					Regional Priority Credit 1-4	
	4			RP Cr's	SSc2, SSc4.1, SSc4.2, SSc6.1, WEc2, MRc2(75%)	1 to 4
					List Reg'l Cr's Above Being Pursued: SSc2, SSc4.1, SSc4.2, SSc6.1	
	Yes	No	?			
	68	26	16	**Project Totals** (pre-certification estimates)		110 Points

Certified: 40-49 points Silver: 50-59 points Gold: 60-79 points Platinum: 80+ points

POTENTIAL CERTIFICATION LVL

*Estimated point range** **62-68**

Rating **Gold**

Additional points possible **16**

CONSTRUCTION COST IMPACT

5-6% (Gold) (~4 yr. payback)
3-4% (Silver) (~3 yr. payback)

Credits with no-low cost impact
44 credits

Credits with mod-high cost impact
12 credits

Credits with Savings Potential
(construction cost savings)
SSc4.4: Parking Capacity
SSc5: Site Development
MRc2: Constr. Waste Management

(lifecycle cost savings)
WEc1: Water Efficient Landscaping
WEc3: Water Use Reduction
WEc4: Process Water Use Reduct.
EAp1: Fundamental Commission'g
EAc1: Optimize Energy Perfor.
EAc5: Measurement & Verification

(productivity cost savings)
EQp1: Min. Acoust. Performance
EQc1: Outdoor Air Monitoring
EQc2: Increased Ventilation
EQc3: Constr. IAQ Management
EQc4: Low-emitting Materials
EQc5: Indoor Chemical Control
EQc6: Controllability of Systems
EQc7: Thermal Comfort
EQc8: Daylight and Views

* Includes a 10% credit contingency for preliminary point forecasting

Statewide Research and Development School, University of Northern Iowa: *Existing Facility Assessment and Preliminary Building Concepts*

Project Budget

Both the renovation and new construction option were preliminarily priced for comparison. The unit costs values used were derived from previous K-12 school construction in Iowa and were adjusted for inflation and historical labor and material cost increases. Each building option budget was divided into construction and non-construction costs. Construction costs are the direct costs of constructing a building while non-construction costs include design fees, contingency funds, supervision fees, furniture and equipment and miscellaneous owner costs. The total construction costs have been divided into site construction, new construction and remodeled construction costs for a finer breakdown in the preliminary budgets.

Budget: Renovation

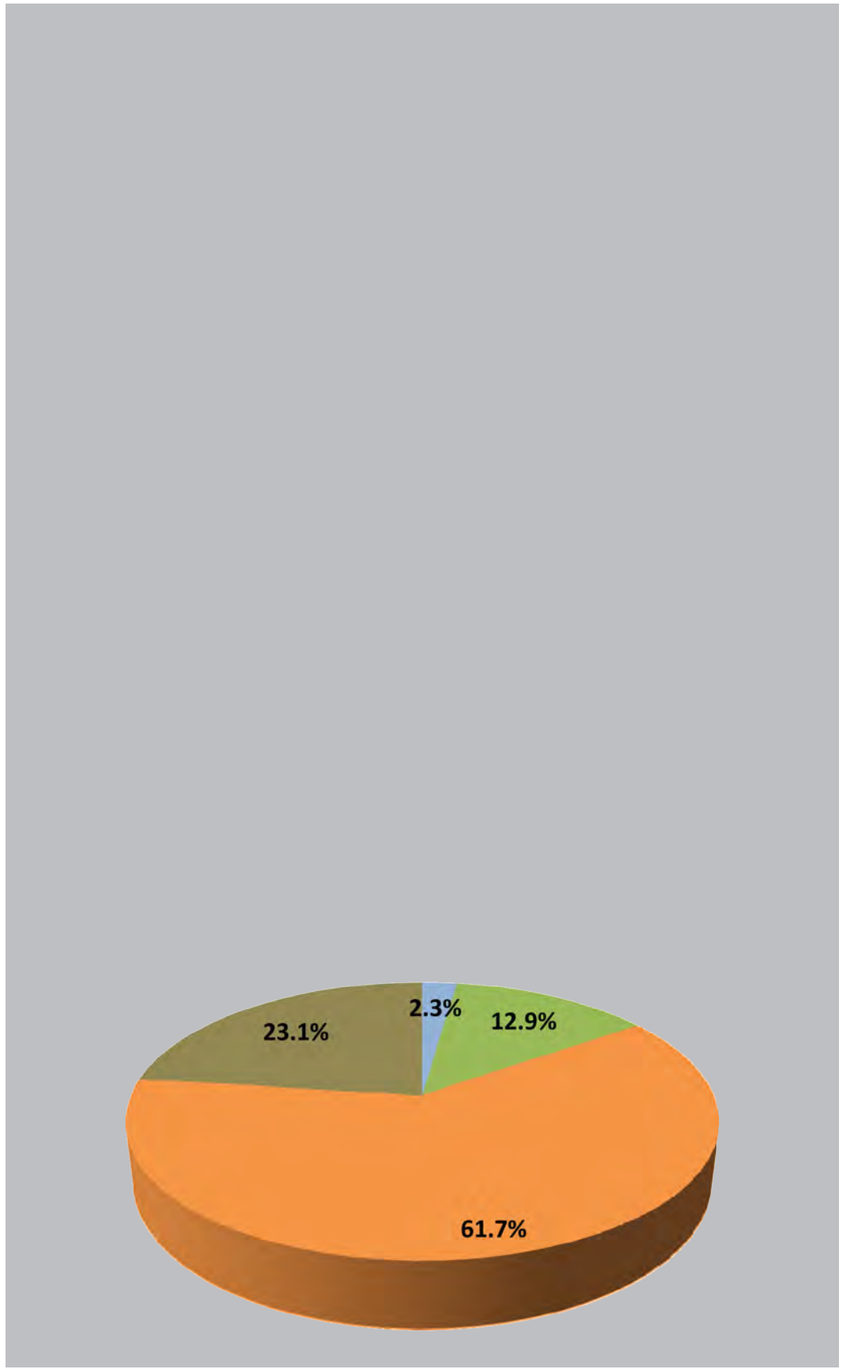

Table 19 - Preliminary Budget: Renovation

Renovation Option					
Area Summary (square feet)					
New Construction					11,333
Remodeled Construction					178,412
Total Combined Area					**189,745**

		$/SF		COST	PERCENT (%) OF PROJECT COST	PERCENT (%) OF CONSTR. COST
Site Construction Costs						
Site (incl. utilities)	$	2.30	$	436,414	1.5%	1.9%
Existing Building Demolition	$	-	$	-	0.0%	0.0%
Geo-Thermal Wells	$	1.70	$	250,000	0.8%	1.1%
SUBTOTAL	**$**	**4.00**	**$**	**686,414**	**2.3%**	**3.0%**
New Construction Costs						
General Construction	$	85.00	$	963,305	3.2%	4.2%
Mechanical Construction	$	28.00	$	317,324	1.1%	1.4%
Electrical Construction	$	17.00	$	192,661	0.6%	0.8%
Tech Cabling, Sound, Security	$	5.25	$	996,161	3.3%	4.3%
Gen Cond, GC Fee (incl site)	$	7.50	$	1,423,088	4.7%	6.2%
SUBTOTAL	**$**	**142.75**	**$**	**3,892,539**	**12.9%**	**16.8%**
Remodeled Construction Costs						
Existing Building Interior Demolition	$	2.00	$	356,824	1.2%	1.5%
Remodeled Existing Construction	$	97.00	$	17,305,964	57.6%	74.8%
Gen Cond., GC Fee	$	5.00	$	892,060	3.0%	3.9%
SUBTOTAL	**$**	**104.00**	**$**	**18,554,848**	**61.7%**	**80.2%**
Total Construction Cost						
SUBTOTAL	**$**	**121.92**	**$**	**23,133,800**	**76.9%**	**100.0%**
Non-Construction Costs						
FF&E	$	10.20	$	1,500,000	5.0%	
Owner Costs	$	6.00	$	1,138,470	3.8%	
Public Art	$	1.00	$	134,000	0.4%	
Design, Supervision Fees	$	13.00	$	1,850,704	6.2%	8%
Contingency	$	1.59	$	2,313,380	7.7%	10%
SUBTOTAL	**$**	**31.79**	**$**	**6,936,554**	**23.1%**	
Total Project Cost			**$**	**30,070,354**	**100.0%**	

Budget: New Construction

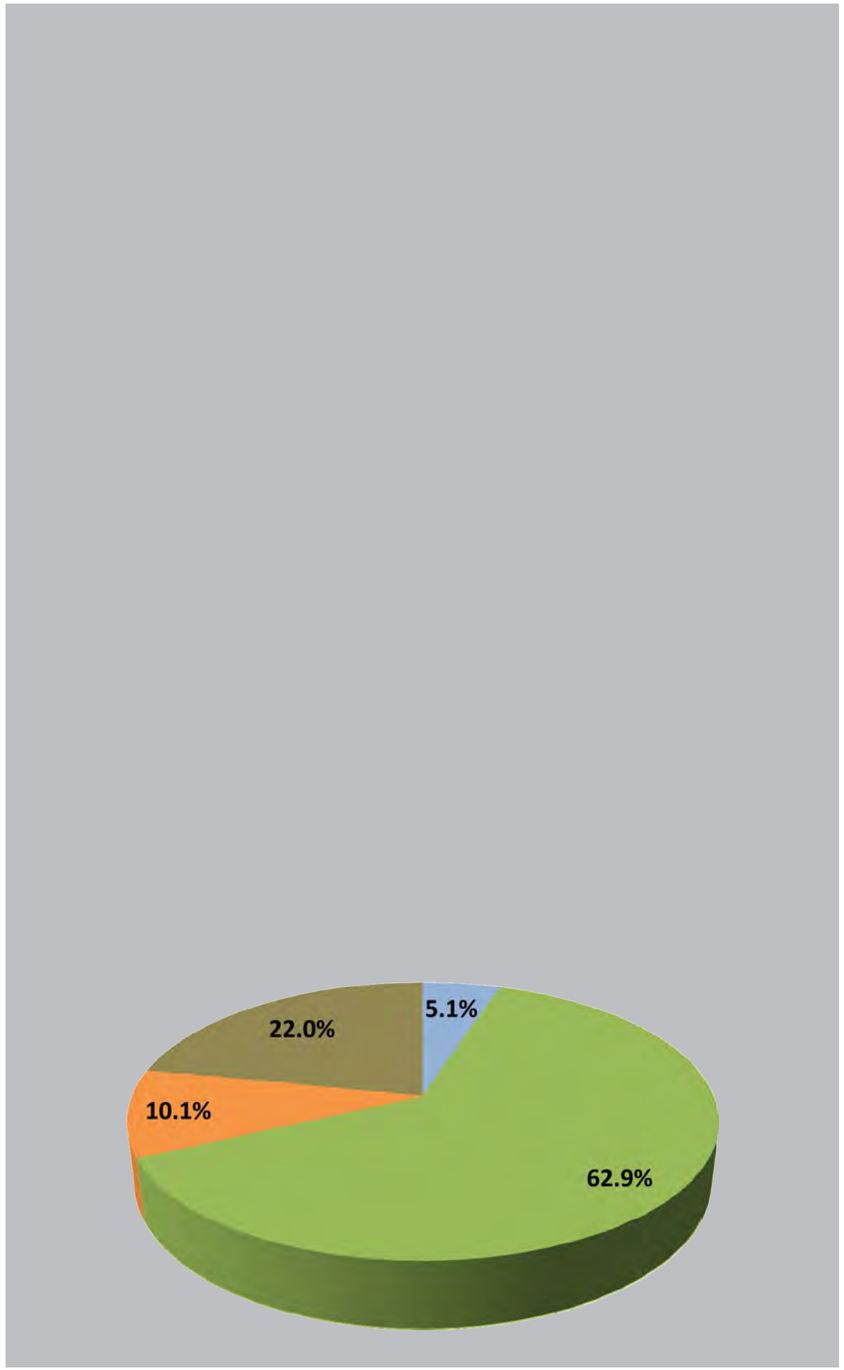

Table 20 - Preliminary Budget: New Construction

New Construction Option						
Area Summary (square feet)						
New Construction						137,354
Remodeled Construction						39,500
Total Combined Area						**176,854**

		$/SF		COST	PERCENT (%) OF PROJECT COST	PERCENT (%) OF CONSTR. COST
Site Construction Costs						
Site (incl. utilities)	$	6.38	$	876,319	2.8%	3.6%
Existing Building Demolition	$	3.00	$	450,000	1.5%	1.9%
Geo-Thermal Wells	$	1.70	$	250,000	0.8%	1.0%
SUBTOTAL	**$**	**11.08**	**$**	**1,576,319**	**5.1%**	**6.5%**
New Construction Costs						
General Construction	$	84.12	$	11,554,218	37.3%	47.7%
Mechanical Construction	$	28.50	$	3,914,589	12.6%	16.2%
Electrical Construction	$	16.60	$	2,280,076	7.4%	9.4%
Tech Cabling, Sound, Security	$	5.25	$	721,109	2.3%	3.0%
Gen Cond, GC Fee (incl site)	$	7.50	$	1,030,155	3.3%	4.3%
SUBTOTAL	**$**	**141.97**	**$**	**19,500,147**	**62.9%**	**80.6%**
Remodeled Construction Costs						
Remodeled Exist. Gymnasium Area	$	48.00	$	897,600	2.9%	3.7%
Remodeled Exist. PE Support Area	$	97.70	$	2,032,160	6.6%	8.4%
Gen Cond., GC Fee	$	5.00	$	197,500	0.6%	0.8%
SUBTOTAL	**$**	**79.17**	**$**	**3,127,260**	**10.1%**	**12.9%**
Total Construction Cost						
SUBTOTAL	**$**	**136.86**	**$**	**24,203,726**	**78.0%**	**100.0%**
Non-Construction Costs						
FF&E	$	10.20	$	1,500,000	4.8%	
Owner Costs	$	6.00	$	1,061,124	3.4%	
Public Art	$	1.00	$	175,000	0.6%	
Design, Supervision Fees	$	13.00	$	1,810,193	5.8%	8%
Contingency	$	1.59	$	2,262,741	7.3%	10%
SUBTOTAL	**$**	**31.79**	**$**	**6,809,057**	**22.0%**	
Total Project Cost			**$**	**31,012,783**	**100.0%**	

Conclusions

Both of the building options assume that the final outcome of each would have an equal amount of classrooms, and an equal amount of usable space. Given that premise, it is the conclusion of this study that the new construction option offers a greater long-term value for a Statewide Research and Development School than the renovation option. In the experience of Perkins+Will, it is generally thought that new construction is the better option when the cost of a complete renovation exceeds 60% of the cost of new construction. In this case, the current cost estimate for renovation is about 97% of the cost of new construction.

Thought has been given to renovating the existing school incrementally in a series of smaller projects. Unfortunately, this option does not reduce the need to do all of the required upgrades. Accessibility, code compliance, mechanical and electrical work all still need to be done. While the approach of renovating smaller areas incrementally may reduce the initial capital expenditures, the long term costs would be higher as construction costs are likely to rise over the course of a long term renovation master plan. Likewise, the construction costs would not have the benefit of the large scale of the entire project, so the series of smaller renovations would likely have a higher per square foot final cost.

The benefits are great in creating a new learning environment instead of remodeling the existing building. The new school could be designed specifically to create the type of flexible learning environment needed in the school for many years to come. A new environment that is not constrained by a footprint of a previous educational model would afford this model school the ability to fully embrace the four primary functions of a research and development school: research, demonstration, development and dissemination. Newly designed teaching areas would allow the study, practice and testing of new innovative teaching and learning practices while effectively sharing and demonstrating these practices for replication in Iowa's classrooms. While these primary functions may be present in the renovation option, they would not have the same impact, longevity or impression as they would in a newly designed facility. Building a new Statewide Research and Development School would not only function as an archetype for innovative teaching practices but become an image of the educational environment of the future.

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